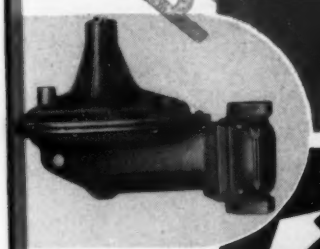
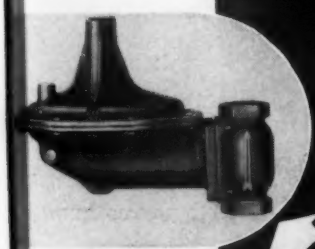
AMERICAN GAS JOURNAL

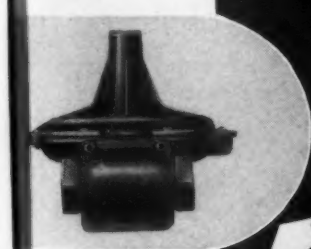
9th YEAR | OCTOBER, 1947 | VOL. 167, NO. 4



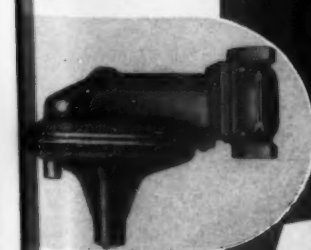
Normal Vertical Position with Down Flow



Normal Vertical Position with Up Flow



Normal Horizontal Position, Flow may be either direction.



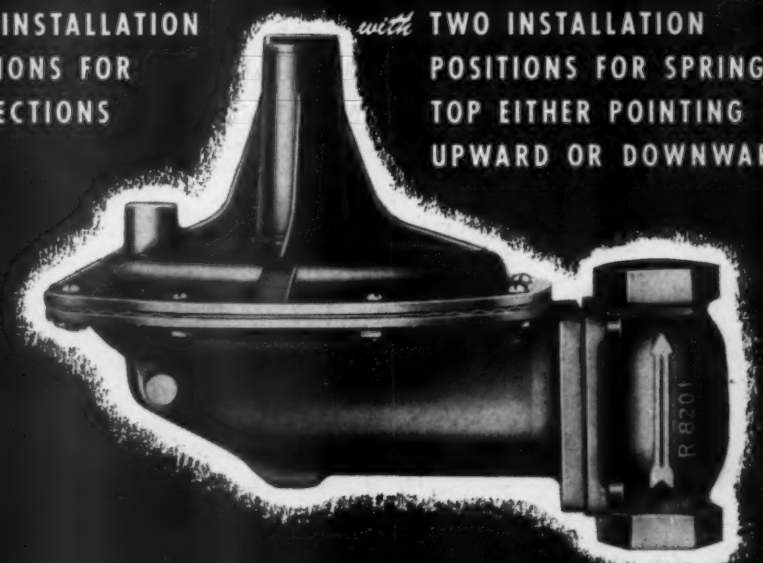
Vertical Position for Water Drainage

Reynolds PRESENTS

NEW PROVEN SERVICE REGULATORS

with FOUR INSTALLATION POSITIONS FOR CONNECTIONS

with TWO INSTALLATION POSITIONS FOR SPRING TOP EITHER POINTING UPWARD OR DOWNWARD



Regardless of whether the installation calls for a vertical position with either upward or downward flow or a horizontal position with flow in either direction, the new Reynolds offers this unusual installation.

With the spring top in an inverted position, the problem of moisture is solved as water will automatically drain out of the atmospheric chamber.

1. This regulator is available with any type seal previously made by Reynolds.
2. Quickly installed in existing house piping.
3. May be installed in any position on a 90° setting.
4. Orifice can be changed at any time.
5. To inspect orifice or valve pocket, only an Allen wrench is needed.

RECOGNIZED GAS CONTROL SINCE 1912

REYNOLDS GAS REGULATOR CO.

ANDERSON, INDIANA, U. S. A.

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Prompt Delivery From Norwalk Valve Co.

Large District Regulators

Built from "Scratch" Shipped 4 weeks after order

WHEN you're in a jam on deliveries, get in touch with Norwalk. We can help you. The three large Norwalk Connelly District Regulators shown above are half of a rush order that Norwalk's production team got behind to help a New York State utility. The others were smaller and went out in less than three weeks.

Norwalk makes a complete line of Connelly District Regulators. They're available in sizes up to 36". Can be used with pressures up to 100 lbs.

Connelly LC District Regulators reduce pounds to inches. They keep outlet pressure constant and unaffected by fluctuating inlet pressures.

No need to fuss with fixed leverage. Connelly's inside leverage multiplies the diaphragm's closing power and provides tight lock up. You can easily adjust the linkage to meet your changing conditions.

Norwalk Connelly District Regulators are balanced valves. The large cover plate makes for easy cleaning and servicing.

Write for further data and prices. We can promise you prompt delivery!

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Chicago
Cleveland
Detroit
Los Angeles
Minneapolis
New York
Philadelphia
Pittsburgh
San Francisco
Washington, D. C.

*factory at South Norwalk, Conn.

NORWALK VALVE COMPANY

33 Railroad Avenue South Norwalk, Conn.

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GAUGES • MERCURY LOADERS

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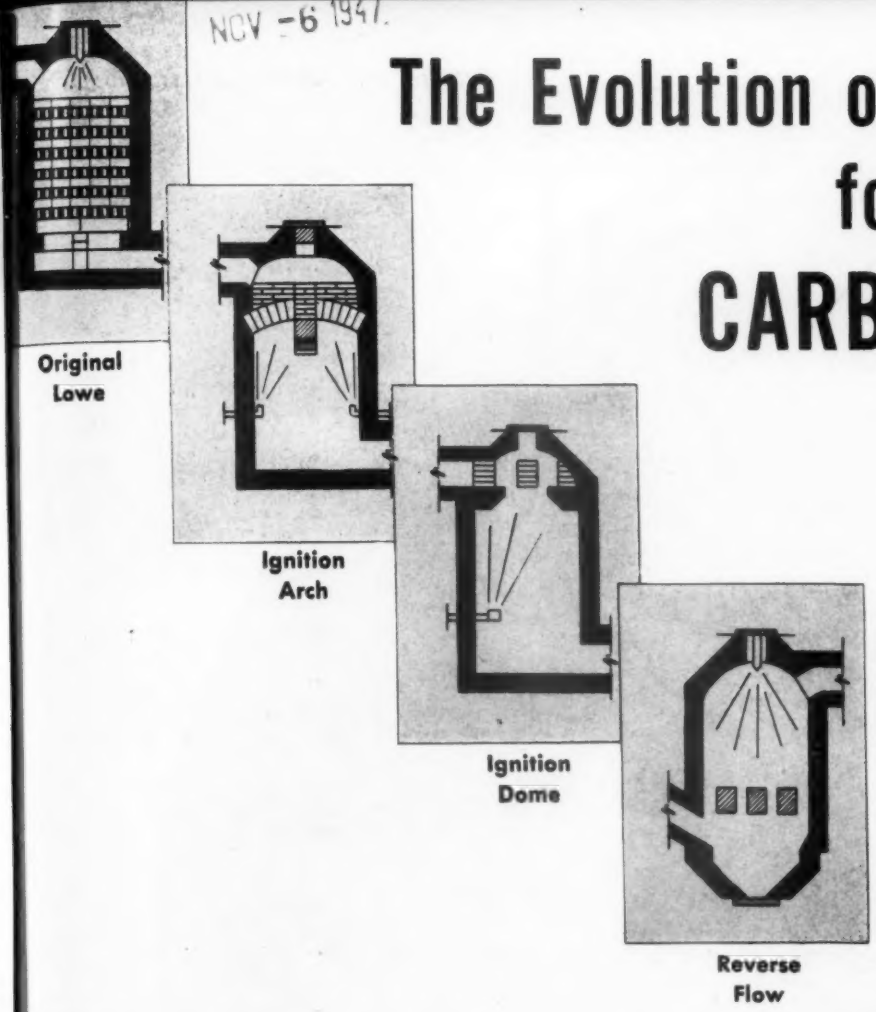
GAUGES • N-50 INSPIRATOR

AMERICAN GAS JOURNAL, October, 1947. Vol. 167, No. 4. Published monthly by American Gas Journal, Inc., at 34 North Crystal St., East Stroudsburg, Pa., Executive and Editorial offices at 53 Park Place, New York 7, N. Y. Entered as second-class matter October 7, 1928, at the post office at East Stroudsburg, Pa., under the Act of March 3, 1879. Printed in U.S.A.

NOV -6 1947

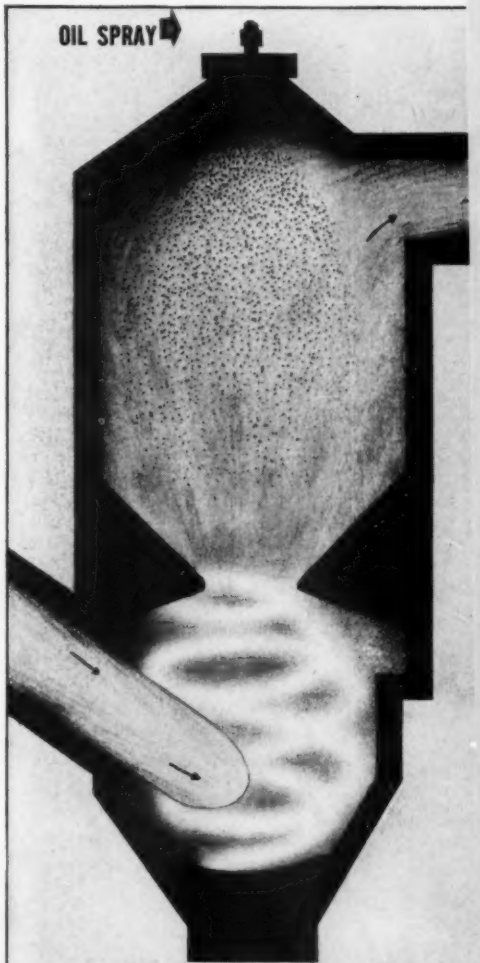
The Evolution of the Design for the CARBURETOR



THE SERIES OF MODIFICATIONS made in the design of the carburetor of the water gas machine provides an excellent example of the creative activity of Semet-Solvay engineers.

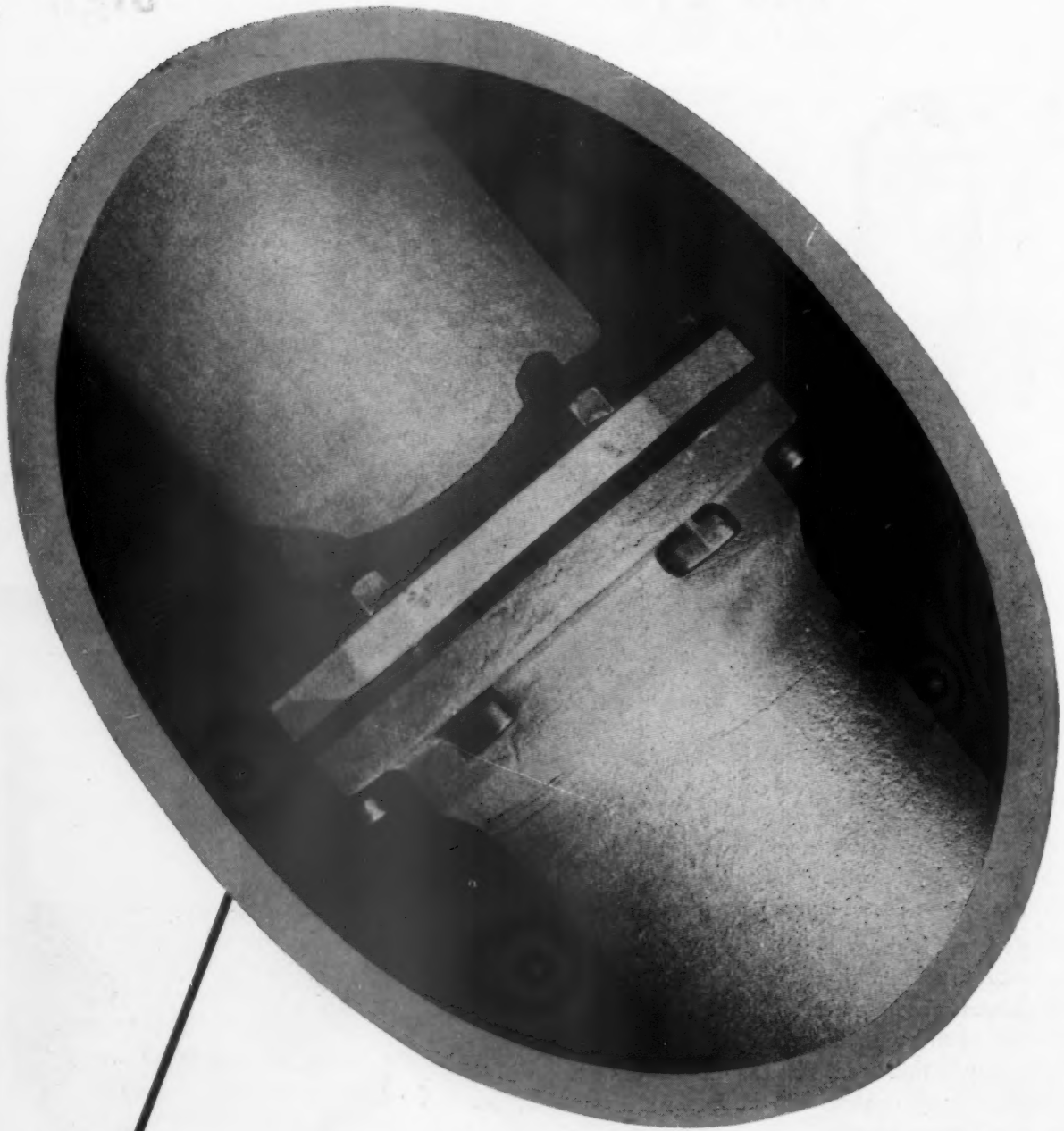
Increasing costs of high grade gas oil and shortage of supply required apparatus to use high carbon residual oils. The Semet-Solvay Ignition Arch introduced the idea of counterflow between blue gas and carbureting oil and, with the Ignition Dome, was a contribution developed to answer this need. The theories proven successful in these two designs finally evolved into the modern improved Semet-Solvay Reverse Flow carburetor.

Here the elevated, checkerless carburetor permits the blue gas to ascend counter-current to the descending enriching oil. thus assuring complete vaporization of the volatile content of the oil. The internal refractory orifice was added to provide uniform distribution of the gas in its upward flow. The outstanding benefit of this design is that heavier oils with a Conradson carbon content of as much as 10 to 11% may be used with no delay in the daily operation of the machine for cleaning out accumulated carbon.



IMPROVED REVERSE FLOW CARBURETOR

SEMET-SOLVAY ENGINEERING DIVISION
SEMET-SOLVAY COMPANY
40 RECTOR STREET • NEW YORK 6, NEW YORK



CAST IRON

Standardized **MECHANICAL JOINT**

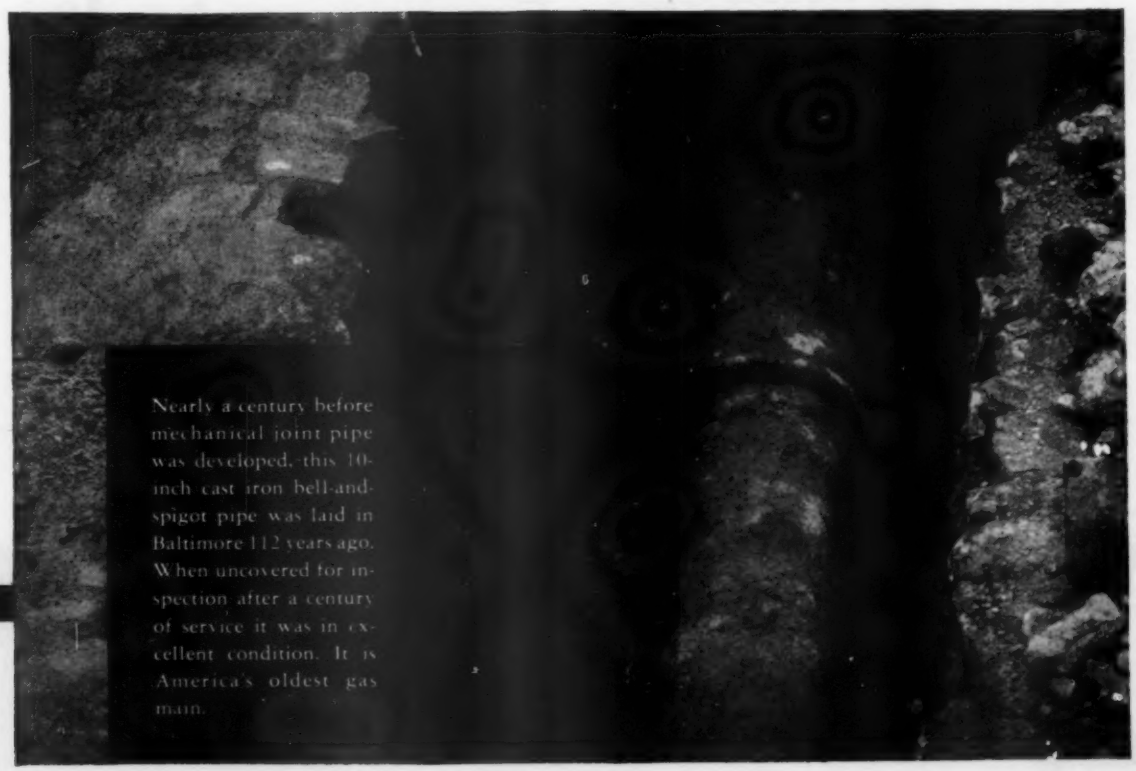
PIPE

NEWEST and OLDEST

The *newest* development in pipe with the *oldest* record of service to the Gas Industry is cast iron pipe with *standardized* mechanical joints. (See cut at left.)

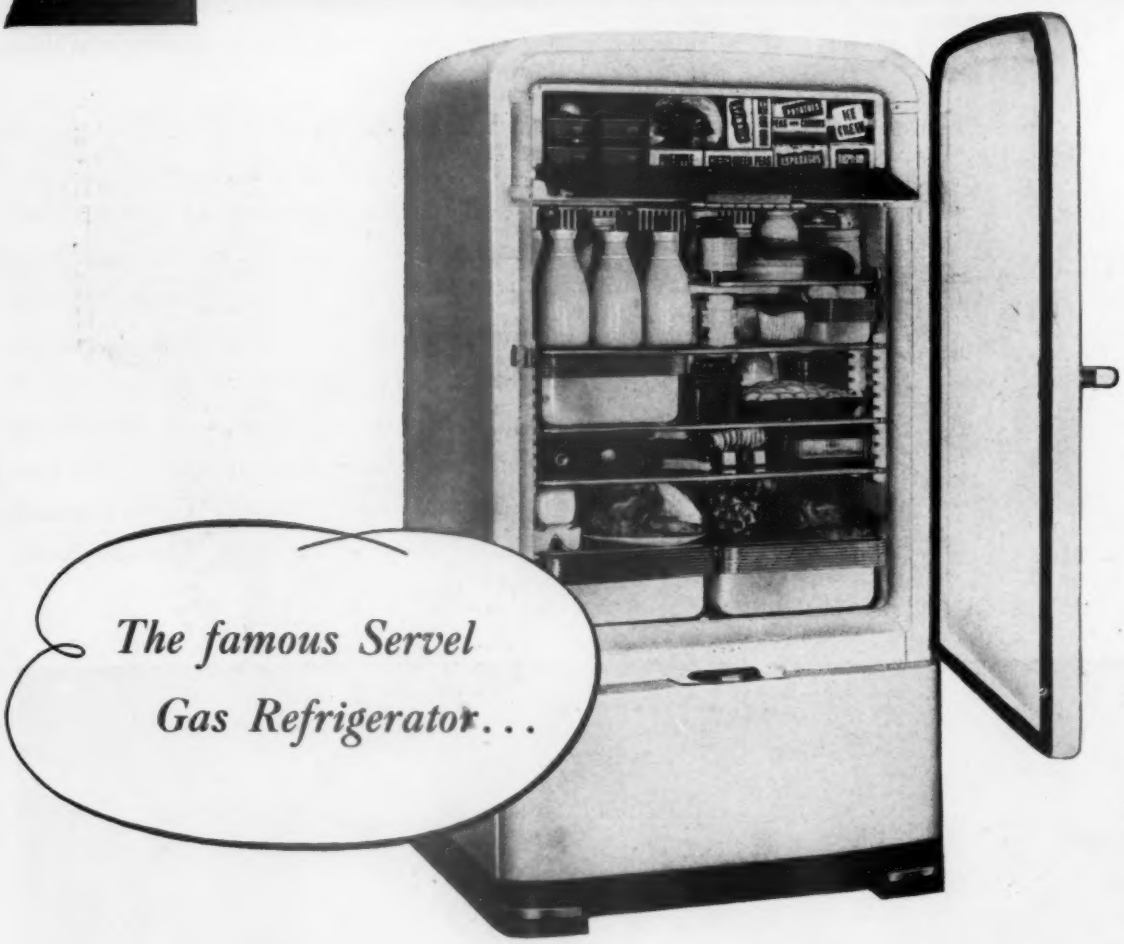
The *oldest* cast iron gas main in America—as old as the Gas Industry itself — was laid 112 years ago in Baltimore by the first gas company to be granted a franchise in this country. (See cut below.)

The Gas Industry has its foundations, you might say, in cast iron bell-and-spigot pipe, and still specifies it for low and intermediate pressures. Cast iron *standardized* mechanical joint pipe, for *all* working pressures, is the newest in a long series of product and design improvements by our Industry. It offers *proved* long life, a bottle-tight joint, and a time-saving assembly with interchangeable parts. Cast Iron Pipe Research Ass'n, Thos. F. Wolfe, Research Engineer, Peoples Gas Bldg., Chicago 3, Ill.

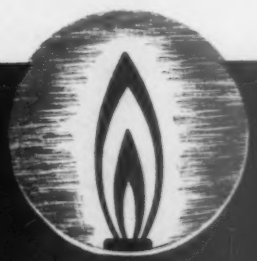


Nearly a century before mechanical joint pipe was developed, this 10-inch cast iron bell-and-spigot pipe was laid in Baltimore 112 years ago. When uncovered for inspection after a century of service it was in excellent condition. It is America's oldest gas main.

SERVEL'S GREAT FAMILY BUILDS GAS LOAD AND

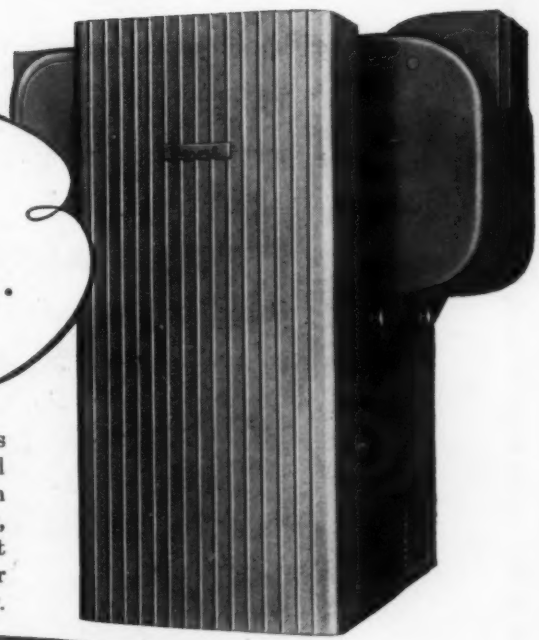


Here's the *only* refrigerator made today that gives your customers all the up-to-date cabinet features of modern food storage PLUS silent operation with no moving parts. What's more, the Servel Gas Refrigerator paves the way for the all-gas kitchen by protecting and insuring your domestic gas cooking load . . . and dramatizing the modernity of gas and gas appliances.

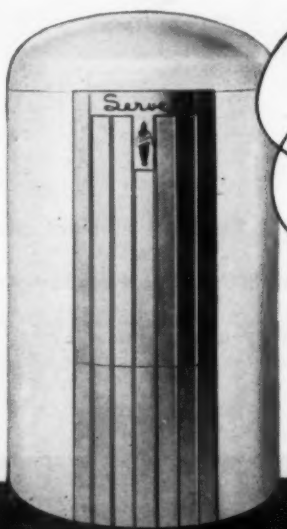


OF QUALITY APPLIANCES GOOD WILL FOR YOU!

The tried and proved Servel
All-Year Gas Air Conditioner...



Here's your great opportunity to build all-year gas load and promote the all-gas home . . . with the Servel *All-Year* Gas Air Conditioner. Already Servel has been tried . . . proved . . . and found successful in homes, stores, and office buildings all over the country. Not only does All-Year Gas Air Conditioning protect your base gas load, but greatly supplements it . . . *all year long.*



The new Servel Ball-Type
Gas Water Heater...

Now that automatic washing appliances have such terrific appetites for hot water, here's the answer to your customers' demand for modern hot water service—the Servel *Ball-Type* Gas Water Heater. Independent laboratory tests have proved that Servel can handle the most rigorous loading of *any* automatic home laundry machine.

UGI equipment

UNITED ENGINEERS FOR

EXPERIENCE IN DESIGN:

United, with over 60 years' experience, offers you the services of engineering specialists in the design of plant expansion involving foundations, buildings, boiler plants, fuel handling, gas-production apparatus, gas-handling equipment, gas holders, compressors, and other gas-plant apparatus.

EFFICIENT APPARATUS:

United has pioneered major developments in water-gas and coal-gas production. Its advanced gas engineering provides efficient, high-capacity, and durable apparatus.

ECONOMICAL CONSTRUCTION:

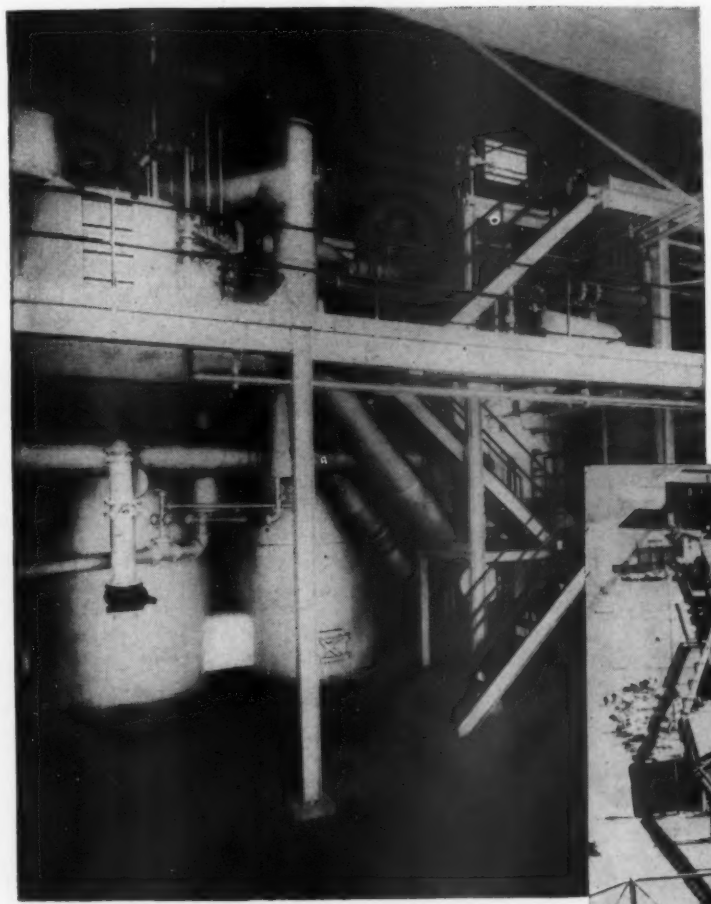
United has large, well organized forces for gas-plant and general construction work, experienced in the expediting and delivery of materials and the handling of labor forces; and trained in the installation of equipment with minimum disturbance to operation.

EXPERIENCE IN OPERATION:

United has experienced plant operators for securing the most efficient results. Operators of long experience in many plants, under various operating conditions, are available to put apparatus in satisfactory operation.

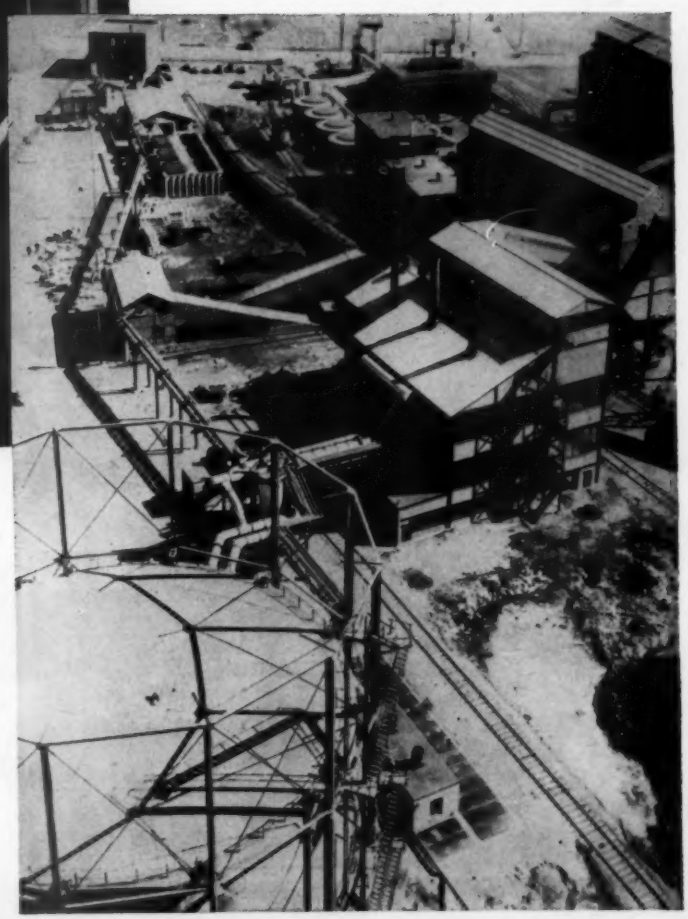
By using United Engineers for your plant expansion, you obtain the lasting efficiency and dependable performance of U.G.I. equipment and processes. • United Engineers' complete ENGINEERING AND CONSTRUCTION SERVICES can satisfactorily conduct all phases of the extensive plant expansion now required by most gas companies.

GAS PLANT EXPANSION



PROVIDENCE, R.I.

U.G.I. Mechanical Generator Carburetted Water Gas Set, Providence Gas Company, Providence, R.I.



SYRACUSE, N.Y.

U.G.I. Mechanical Generator Carburetted Water Gas Plant, Central New York Power Corporation, Syracuse, N.Y.

UNITED ENGINEERS & CONSTRUCTORS INC

NEW YORK 17 • PHILADELPHIA 5 • CHICAGO 2

WITH A BACKGROUND OF OVER SIXTY YEARS' EXPERIENCE

THIS Swinging Gate-Type VALVE

opens or closes in less than 5 seconds . . . withstands 2200 degrees F

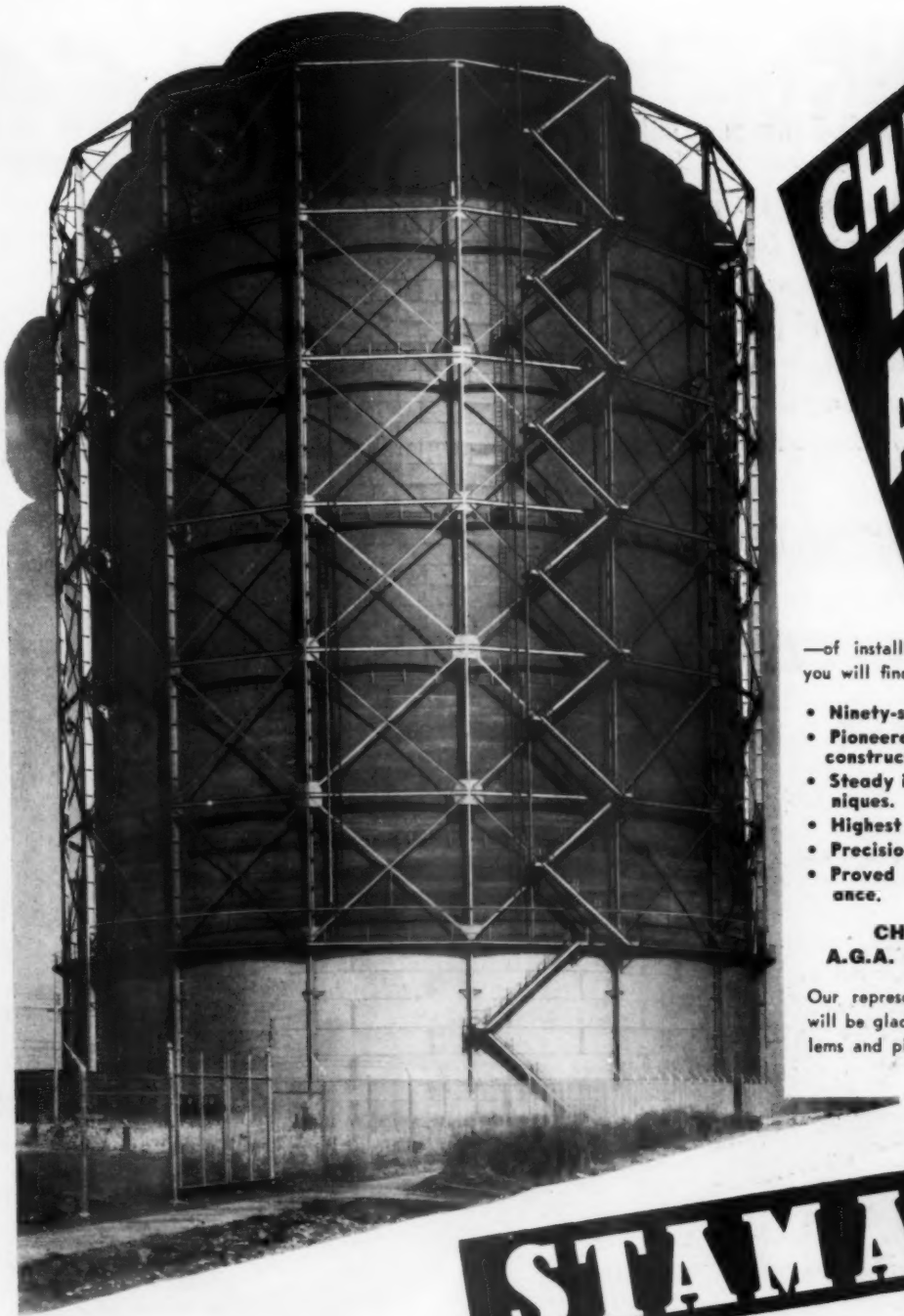
For more detailed information write us for Bulletin No. 2012

FOR THE MANUFACTURED GAS INDUSTRY— OR SIMILAR APPLICATIONS

The Blaw-Knox Swing-Type Valve is designed to handle hot gases at pressures from a few ounces to five pounds or more and to give positive shut-off with a quick opening and closing action. Sizes are from 24" to 54". Many of these have been in constant use for more than 3 years on cyclic operations. Valve disc and valve seat are water cooled.

BLAW-KNOX DIVISION
OF BLAW-KNOX COMPANY
BLAWNOX, PENNSYLVANIA

BLAW-KNOX DIVISION OF BLAW-KNOX COMPANY



CHECK THE ADVANTAGES—

—of installing STAMANCO Gas Holders and you will find *satisfactory service* assured through

- **Ninety-six years of experience.**
- **Pioneered advancements in design and construction.**
- **Steady improvements in fabrication techniques.**
- **Highest quality workmanship.**
- **Precision operation.**
- **Proved records of outstanding performance.**

CHECK WITH US AT THE A.G.A. CONVENTION—Oct. 6-7-8

Our representatives will be in attendance and will be glad to discuss your new equipment problems and plans with you.

STAMANCO

The STACEY MANUFACTURING Co.

SINCE 1851

CINCINNATI 16, OHIO

GAS HOLDERS • HI-PRESSURE TANKS • PURIFIER BOXES

ENGINEERS • FABRICATORS • CONSTRUCTORS

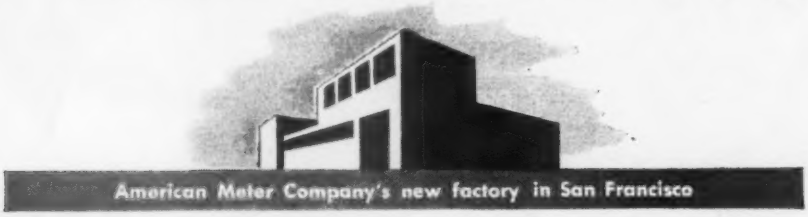
An Independent Organization Not Affiliated With Any Other Builders of Gas Holders

BUILDING... to meet the GAS

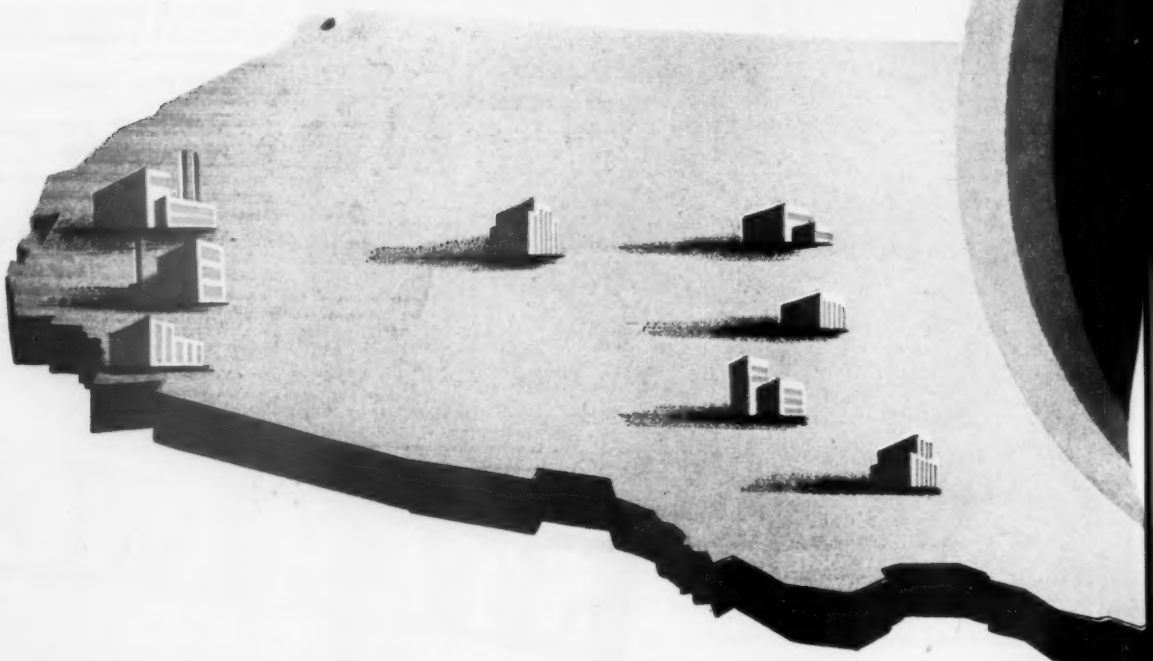
For more than 111 years, American Meter Company has kept pace with demands for better measuring.

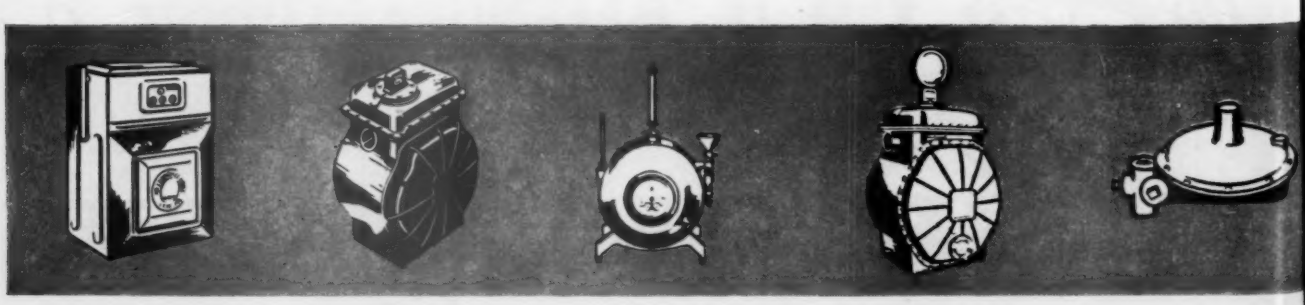
Through war and postwar shortages, we've rigidly maintained our policy of providing customers with tested design and proven materials. In spite of difficulties, our factories have been operating at record capacity.

A comprehensive research program to parallel the industry's



American Meter Company's new factory in San Francisco

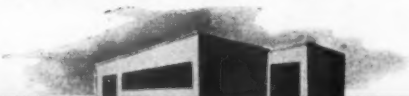




Industry's expanding needs

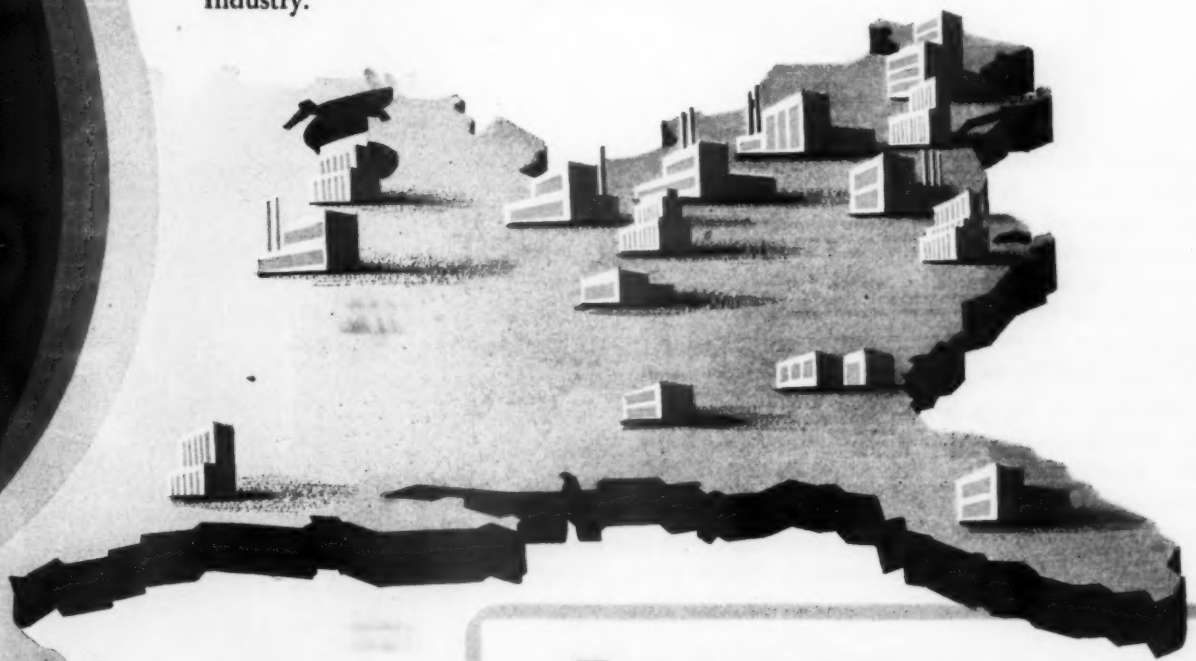
expanding needs has been actively operating. As a result of a broad program of factory and mechanical modernization, many new automatic precision machines and improved methods are already at work for your advantage.

This new construction as well as plant expansion and improvement at Albany, Boston, Erie and Philadelphia added to existing



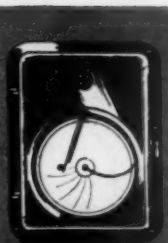
American Meter Company's new repair and service plant in Orlando, Fla.

factories and repair shop facilities with 23 sales offices, provides the coast to coast service American Meter Company affords the Gas Industry.



AMERICAN METER COMPANY

INCORPORATED (ESTABLISHED 1836)



Albany • Atlanta • Baltimore • Birmingham • Boston
Chicago • Dallas • Denver • Erie • Houston • Joliet
Kansas City • Los Angeles • New York • Orlando
Philadelphia • Pittsburgh • San Francisco • Tulsa

WHY VULCAN'S MOLDED DIAPHRAGM IS LIKE A CAMEL *in more ways than one!*

The VULCAN Molded Diaphragm is durable, built for long, dependable service. It never gets dry. The dual rim feature, like the contour of a camel's back, employs a sound principle by distributing the gentle flexing motion over a greater area. There are no points subject to angular bending . . . no places where friction or wear are localized. This means longer service life and assures greater uniformity of differential pressures. This in turn contributes to greater metering accuracy.

VULCANS need no oiling or re-oiling, yet they remain soft and pliable. They do not dry out or stiffen. All VULCAN Diaphragms of a like specification are of the same uniform thickness, the same precise identity of dimensions and characteristics.

VULCANS are securely vulcanized to the rings, with the added safety fastening of high tensile strength tinned wire. String leaks are abolished. The seam, too, is securely vulcanized—not stitched.

VULCAN Diaphragms are the result of many years of scientific research for the ideal material and design. Their acceptance by utilities and meter companies of the most rigid standards attests to their superiority in performance and in value.

FOR USE IN MANUFACTURED, NATURAL AND LP GASES

VULCAN

PROOFING COMPANY

FIRST AVENUE & 58th STREET • BROOKLYN 20, NEW YORK

VOLUME 167
Number 4

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NUMBER 3883

OCTOBER 1947

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IT'S THE KNOW-HOW THAT COUNTS

General view of tank bottom for 10,000,000 cu. ft. Stacey Bros. Patented All-Welded Panel Type Gas Holder now under construction at Elizabeth, N. J. Note size of trucks and men in relation to tank bottom.

In laying a steel tank bottom 276′ 6″ in diameter for a 10,000,000 cu. ft., Stacey Brothers All-Welded Panel Type Gas Holder, which involves over four tons of welding rod and over two miles of welding, accuracy and experience are of utmost importance.

Each plate has to be laid with the required edge distance for laps, without assembly bolts, and since hundreds of plates are required in the 60,000 sq. ft. area, any variation in the spacing can easily throw the true diameter out as much as 3″ or more.

Furthermore, depending on temperature variations, the elongation in the steel plates across the bottom can expand 1½″ or more, so definite welding procedures have to be followed in order to eliminate permanent buckles.

Stacey Brothers have the experience to lay perfect tank bottoms, as noted in the above photograph. On each and every job, definite procedures are worked out covering assembling, fit-up, tacking, sequence of welding, etc.

Since the advent of welding, Stacey Brothers have installed over 80,000,000 cu. ft. of all-welded gas holders ranging in capacity from 100 cu. ft. to 10,000,000 cu. ft.

STACEY BROTHERS GAS CONSTRUCTION CO.
One of the Dresser Industries
5535 VINE STREET • CINCINNATI 16, OHIO

For an interesting 50-page illustrated catalog on Stacey Brothers Patented All-Welded Panel Type Holders, write for Bulletin W-45.

Stacey Brothers
ALL-WELDED GAS HOLDERS

OCTOBER 1947

AMERICAN GAS JOURNAL

VOLUME 167 No. 4

The Rising Costs of Manufactured Gas

By
Alfred I. Phillips
Consulting Engineer

THERE is no executive in the manufactured gas industry today who views with complacency the ever rising prices of materials and labor. During the past year the rate of increase has tended to become very rapid. Many speak of the condition as inflation, but regardless of how it may be described, rising prices are with us. Necessarily these must be met in most cases by higher rates if the gas industry is to survive and prosper.

Almost from its earliest days we have had tough problems to meet and overcome. This is just another one to add to our book of experience.

Experience Following World War No. I

Thus, we may well turn back the pages of history to the somewhat similar, but at least equally serious problems after the last war. Some of us may remember them well. In any event, in the Proceedings of the First Annual Convention of the American Gas Association twenty-six years ago it is recorded that a speaker, Mr. Francis H. Sisson, Vice President of the Guaranty Trust Company of New York, told us:

"If the grim danger from without which threatened our national existence less than a year ago did not teach us the value and necessity for co-operation, surely the chaotic conditions which have followed the cessation of hostilities should offer impressive and conclusive proof of the interdependence of all economic factors.

"We seem to have become confused by the multifarious and vexing problems of peace. We are endeavoring, for instance, to solve the high cost of living by continually raising wages, but we discover that by increasing wages inordinately we simply increase the cost of living—in brief, that we are going around in a vicious circle and arriving nowhere. The same confusion of thought, in fact, prevails in respect to practically all other phases of our economic life.

"There is no panacea for this trouble, which is largely, if not wholly, psychological, as there is no cure-all for our physical ailments. But it is high time that we realize that no vital organ of our body politic can function improperly without ultimately impairing the health of the whole body. It is imperative for us to understand that we cannot abuse a vital economic organ, any more than we can abuse a vital human organ, without paying the penalty. The laws of nature and economics are inexorable and inescapable. It is sheer folly, and worse, to violate or attempt to evade those laws.

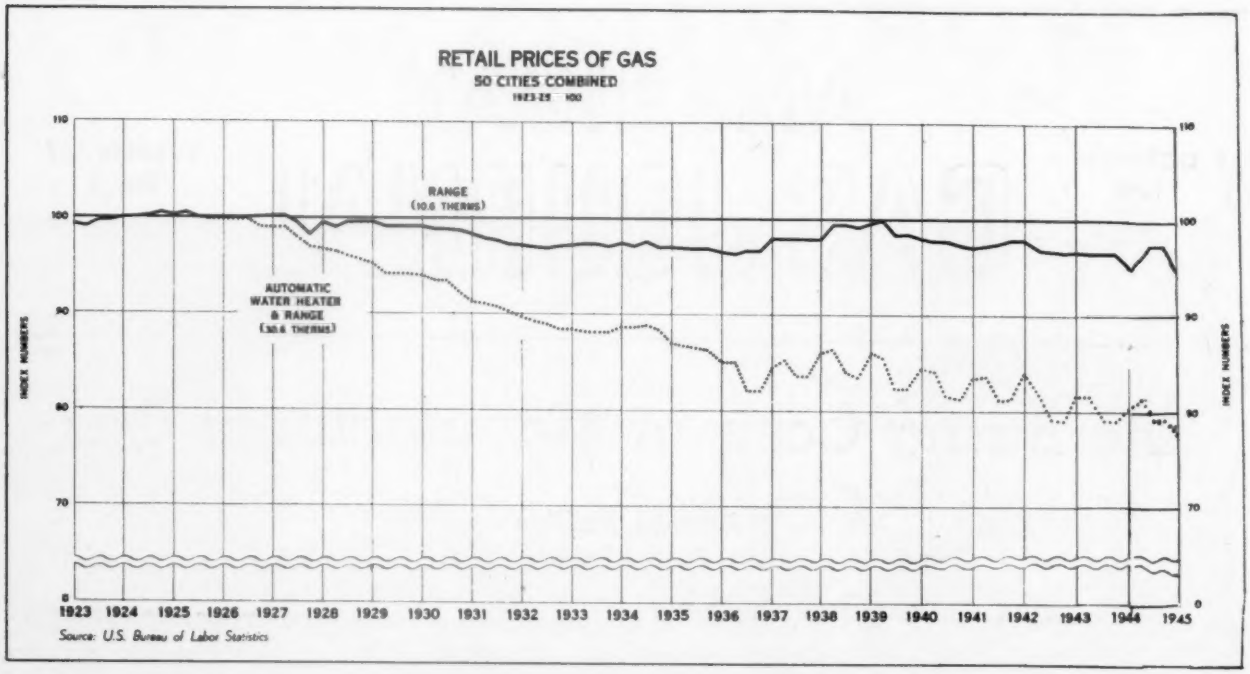
"Yet we are witnessing such fatuous efforts today, and following close upon them—like swift vengeance—we are likewise seeing the consequences. These phenomena are nowhere more potent and tragic than in our public utilities, those vital elements of our economic organism which supply heat, light, power and transportation.

"As a definite measure of the increase in cost, some figures presented in the 1918 report of the Peoples Gas Light & Coke Company of Chicago may be interesting. From 1915 to 1918, the cost of fuel and oil for the manufacture of gas increased from 19.97 cents per 1,000 cubic feet of gas to 42.77 cents per 1,000 feet. Manufacturing labor increased from 2.61 cents to 6.12 cents. The total cost of gas produced rose from 25.74 cents per 1,000 to 48.17 cents, while the cost of gas delivered to consumers increased from 56.20 cents to 79.32 cents. In the same time, the revenues from gas decreased from 77.89 cents per 1,000 cubic feet to 75.63 cents."

You can read further details of the problems of these times if you will. However, by hard work, intelligent handling and perseverance, we met these conditions and prospered.

Price Trends After World War No. II Of Similar Nature

World War No. II has brought us other problems not unlike those of a quarter of a century ago. Along with many other commodities, the prices of materials of gas manufacture have increased at least 40 to 50 per cent since 1941. During the same period, the wages of labor have in-



creased 30 to 40 per cent or even more. One large company has figures which indicate that labor costs have increased as much as 67 per cent since our entrance into the World War. Another shows material costs up over 60 per cent.

The price of heavy oil in New York harbor is up 70 per cent over 1941, as shown on the accompanying chart, and it is difficult to get at any price.

Coke is up 45 to 50 per cent or even more.

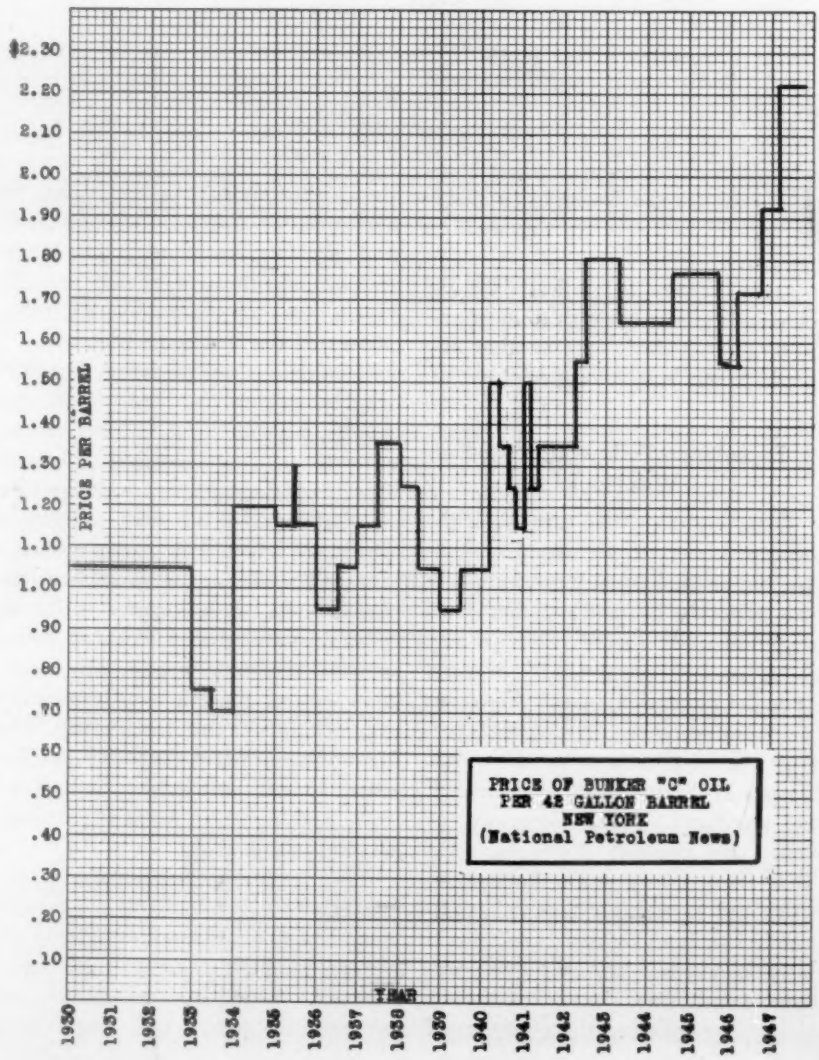
One company as an example appears to have experienced the following combined index prices for manufacturing materials:

1941	—	100
1942	—	119
1943	—	127
1944	—	128
1945	—	128
1946	—	135
1947	(to date)	163

For many years the retail price of gas has maintained a downward trend, as shown on the chart "Retail Prices of Gas." This trend is now being reversed because of the conditions which have been thrust upon us.

Increased Prices of Gas Expected

Only within the last few days Westchester Lighting Company has submitted documents and charts at a hearing before the Public Service Commission in New York to support its contention that the production and distribution of gas will cost considerably more in 1947 and 1948 than it did in 1946. The company is therefore seeking to increase rates to resi-



dential consumers in Westchester County from 6 to 39 per cent.

The Philadelphia Electric Company has announced that it filed a new schedule with the Pennsylvania Public Utility Commission on September 15th calling for higher gas rates effective November 15th. It said "Higher costs for coal and oil and other increased costs associated with gas and steam production, including labor, is the reason given for the rate boost by the Company officials. In a letter to customers, the Company reported that the cost of important raw materials used in the manufacture of gas has gone up substantially since 1939. Coal has increased 60 per cent, byproduct gas produced by refineries and purchased from them by Philadelphia Electric Company has increased 90 per cent, and oil has increased 44 per cent."

For the past twenty-five years the cost of gas service to Philadelphia Electric Company customers has not increased. There have been a numbr of reductions of gas rates in that period, but this is the first increase and the reason for it is almost self evident.

Confronted by conditions such as we are now facing, it seems very important that rate changes be promptly handled or that rate structure to be so devised that at least the major part of any increase in cost will be reflected promptly in the prices charged to the customer. Two principal methods of doing this are now in common use: (1) a formal rate case is brought before the public service commission and a decision is given according to the usual methods, the new rates perhaps being fixed in some cases on an interim or temporary basis, (2) fuel and oil surcharges are incorporated as a part of the rate, particularly in New England where the prices of gas are automatically increased to compensate for the increased costs of manufacturing materials.

Increases Granted Certain Major New York Companies

Thus far in New York State there have been three important companies which have received increased rates on a temporary basis by the usual case rate methods. These companies are:

Brooklyn Union Gas Company. Case 12979. Approved by the Commission July 24, 1947. An increase in the price of gas of 5 cents per M cubic feet was recommended for most customers. For certain usages this was increased to 10 cents per M. The Commission said:

"Summarizing, results of operations in 1946 under 'normal production' conditions would have been such that no additional revenues from consumers would be warranted. However, just as the generally increasing price and wage trends have affected practicaly every industry and practically every individual, so also will the company have to meet higher wage payments, greater material costs, and increased taxes in 1947. Such increased costs will be offset in part by additional revenues to be secured from increased sales of gas, but wage, price, and tax increases are of such magnitude as to warrant higher charges to consumer. . . .

"The question remains as to how this increase, approximately the amount sought by the company, is to be secured. The company has not proven that rate increases should be spread as proposed, that the resultant percentage increases for various consumptions under the various service classifications are proper. It goes without saying that the company believes the present rate schedules distributed costs properly over the various classes of consumers under conditions existing in 1935. This may or may not be the case, but conditions have changed, and there is no proof that either present rates or proposed suspended rates are now proper. Unless and until studies are made of the costs of supplying gas under various conditions of consumption, no final conclusion can be drawn as to just what rate changes would be entirely proper.

"There is one element in the need for additional revenues which suggests some varying increases in rates such as is proposed by the company. If gas usage had increased by the same percentage in every consumption block, unit revenues would have been maintained at the higher levels of past years and total revenues would have been proportionately higher, which is another way of saying that the overall revenue increase now necessary is brought about in part by increased consumption in the higher consumption blocks carrying the lower rates per cubic foot of gas. This is illustrated by the fact that gas sales have increased but unit revenues per cubic foot of gas have declined. This plus the fact that increased costs will affect primarily unit production costs whereas increases in other classes of expenses will be offset to some degree is not entirely by greater consumption with resultant little change in unit costs, urges that consumers using the greater quantities of gas should make up proportionately more of the needed revenues.

"The rates proposed by the company accomplish this to some degree. For example, under the residential service classification, rates to small consumers would be increased by 3 per cent, ranging upward for greater consumptions to 6.4 per cent for usage of ten thousand cubic feet per meter per month, and a higher percentage increase for consumptions in excess. The same is true generally as to the other service classifications. Hence, while it cannot be said that the rates proposed by the company are entirely proper, they do have the desired effect of placing more of the burden upon consumers using the greater quantities of gas.

"Accordingly, it is recommended that the suspended rates be permitted to go into effect, but as a temporary measure only, to provide additional revenues to meet increased material and labor and tax costs. Needless to say, the proceeding should be continued."

Brooklyn Borough Gas Company. Case 12994, Approved by the Commission August 6, 1947.

"It is recommended that increases of ½ cent per 100 cu. ft. be authorized for the service classification and blocks where the company has sought increases of one cent and that where

As illustrating the effect of fuel prices on net earnings, Brooklyn Union Gas Co. deferred action September 24th on the dividend due on November 1. Directors also decided to ask the Public Service Commission for further temporary rate increases.

The company said that recent rises in the prices of oil and coal will affect the cost of production to such an extent that additional revenues must be sought.

Directors of the company said that the dividend was deferred until later in the year when the trend of earnings could be more readily ascertained.

The application of the company for additional rate increases is expected to be submitted to the commission very shortly. On July 25 the commission granted the company a temporary increase in gas rates to be effective until July 1, 1948.—Ed.

the present lowest rate is 5 cents per 100 cu. ft. an increase of 1 cent be authorized. This is calculated to produce about $144,000 of additional annual revenue and to increase net income after taxes about $86,000. Added to $245,000 under present rates it would give $331,000 for return, which is over 4½ per cent on the rate base and would leave about $152,000 for the common stock equity, after interest and preferred stock dividends. It will tend to be further increased to the extent that increased sales exceed the estimate of sales and the increased expenses due to such increased sales, such result being indicated by the results of the first quarter of 1947. It is recommended that these rates be authorized for the period ending July 1, 1948, unless otherwise ordered by the Commission."

Kings County Lighting Company. Case 12978, Approved by the Commission August 6, 1947.

"Throughout the preceding discussion, there have been pointed out from time to time the respects in which the record is not adequate to dispose of all issues and make findings as to the factors that should be considered in every rate case. The burden of proof is in all respects upon the company and the company has failed to provide a basis for final determination. This condition is partially due to the lack of economic stability in prices and commerce and industry generally. Removal of government control of prices naturally leads to uncertainty and often to temporary price increases. After World War No. I, many economists predicted that there would be no marked decrease in prices and that a general level would be established at about twice prewar prices. As a matter of fact, the decline suddenly began in May 1920 and there was a rather precipitate fall for a considerable period. Ultimately, after a number of years the pre-war level was reached. While it is a significant fact that after every great war prices have fallen ultimately to the pre-war level, the situation that has existed since 1939 is different in many respects than in and after World War No. I, with the result that the present uncertainty is greater than after that war. Economists are now more disinclined than their predecessors to hazard forecasts and in general this seems to be no time when one should undertake to fix for any considerable period the level of utility rates, particularly in the case of gas service in the metropolitan area.

"Assuming that many gas companies are in need of increased rates, the most difficult phases of the problem still remain. How much increase is needed or justified? How long should it remain in effect? How should it be distributed among the various classes of users and rate blocks.

"In the instant case, the company proposes no increase in the first block, which produces over one-third of the total revenues. In the second block the increase is 20 cents per M or about 21 per cent. In the third block, the increase is 15 cents per M, also about 21 per cent. In the fourth block the increase is about 20 per cent, but in the fifth block the increase is 50 per cent and in the sixth block it is over 60 per cent."

"The record clearly establishes that the company is not earning a fair return at present rates and that it is entitled to rates which will produce more revenue than those now in effect.

"The record is entirely lacking in testimony to show that the manner in which the company proposes to obtain additional revenue is justified and that the proposed rates are just and reasonable. Indeed, the company made no real attempt to show that the specific increases were justified by the facts for any consumption block purpose of use or class of consumer.

"Upon many points upon which findings should be made, the testimony is insufficient to reach definite conclusions and there are many subjects upon which there should be further investigations and analysis of company operations.

"Under ordinary circumstances, any attempt to forecast conditions and determine what the needs of a utility will be in the near future involves considerable uncertainty. This situation is greatly accentuated at present because economic conditions in general are very uncertain and the future trend of wages and prices is wholly unpredictable.

"The practical effect of the rate changes proposed by the company can only be determined by experience. This is particularly true in view of the lack of uniformity with which increases have been applied and differences of opinion by the various companies as to the exact way in obtaining additional revenue.

"With the large number of utilities pressing for increased rates, there has been no opportunity for the staff of the Commission to conduct an independent investigation and to offer proof upon matters partially covered or wholly ignored.

"Under all of the circumstances, the Commission is of the opinion that the companys' proposal should be allowed to become effective provided it bears a termination date of June 30th, 1948, subject of course, to the issuance of any order prior thereto disposing of the issues in the proceeding."

In addition to these companies and Westchester Lighting Company, heretofore mentioned, a rather large number of applications for increased gas rates in New York State are to be expected in the next several months.

Increases Granted in New Jersey, Pennsylvania and Maryland

Public Service Electric and Gas Company. (Also **Atlantic City Gas Company and County Gas Company.** Docket 2135, Approved by the Commission for bills rendered December 1, 1946. An increase of 10 cents per M was allowed on consumption of 5,000 cubic feet and over and also on Building Heating and Cooling Service. The Commission said:

"Although gas furnished by applicants for space heating is produced and distributed in the same manner as gas furnished for all other purposes, the foregoing considerations motivated the applicants to offer gas for space heating at lower rates than for other residential and general services.

"However, conditions have changed materially since applicants' present rates were filed in 1935 and 1936. The surplus capacity which applicants then enjoyed has almost ceased to exist as a result of the considerable increase in the volume of sales. Each of the applicants is now engaged in providing additional capacity in order to adequately provide for requirements of present and prospective customers. Production and other costs have materially increased. It also appears that the price of oil used for house heating has increased approximately 50 per cent.

"It is noted that the applicants propose increases ranging up to approximately 20 per cent in the price of gas for house heating. When this is compared with the 50 per cent increase in the price of oil for house heating, it is evident that customers who selected gas as a heating fuel prior to the war would now be in a substantially more favorable position with respect to alternative fuels even under the proposed gas rates."

Increases of similar character were approved for Jersey Central Power and Light Company.

(Continued on page 58)

Immersion Tubes, Open Pressure Burner Fired

By

S. E. Shepard

Vice President and Sales Manager
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IMMERSION heating may be defined as the heating of liquids from heat sources located within the body of the liquid. The outstanding advantages of such a method comprise low heat losses, high heat transfer from heat source to heating surfaces, high heat transfer from heating surfaces to the bath and simple adaptability to a wide variety of applications.

Methods of heating by immersion fall into two classes, of which the first is combustion and the second non-combustion. In the combustion group there are four members, namely open pressure burner fired, enclosed pressure burner fired, open atmospheric burner fired and submerged pressure burner fired.

Consideration will be centered in this treatise upon the open pressure burner classification of combustion heating of immersion tubes. This type is simple to install, easy to light, readily observed, stable in operation, readily adaptable to automatic lighting, automatic controlling and automatic safety protection. It is efficient in operation and moderately priced.

As a comparison, the enclosed pressure burner has only simplicity of installation, efficiency, and moderate cost in common. Gases cannot back out of the tube entrance of an enclosed burner, but neither will they from a properly designed open pressure burner installation. Enclosed burners are critical of adjustment and are unstable at high capacities.

Atmospheric burners are very simple but are limited in capacity and require induction of air by stack, ejector or suction fan. They are not well adapted to turndown without simultaneous controlling of the air entrainment device.

Submersion burners use no tubes but maintain their flames within the liquid. They obviously cannot be used with viscous liquids, and require somewhat higher pressure air supply even in water than do the other types. Their emitted gases greatly increase evaporation losses probably due to flash steaming of the water. 170°F. is the ceiling attainable because of the high evaporation losses. Multiple burners merely increase evaporation losses with no elevation of the bath beyond that limit. Lighting is not simple and very limited safety devices can be used.

Convinced of the dearth of comprehensive information available on all phases of combustion immersion heating, the North American Mfg. Co. in 1942 set out on what was envisioned to be a few weeks' investigation on the subject. So involved became the paths of research that 26 weeks dragged by before results of sufficient scope and conclusion were rounded out. Each of the four kinds of combustion immersion was investigated before arriving at a decision to settle most of the effort on the open pressure burner firing method.

To study the heat requirements and the correct application of burners, tube sizes and tube lengths, it may be well to proceed by first recalling the basic elements involved in a heat balance. The fuel input is dissipated through heat storage, heat losses and flue losses.

Heat storage involves merely that part necessary to heat the tank, tubes, liquid and work. It is obtained in Btu per hour by multiplying the specific heat of each respective material by its temperature rise in degrees Fahrenheit. In the use of other baths than water, heat storage need only differ in the use of the appropriate heat content of the liquid and in the tank, tube and work materials involved.

The heat storage for the work and its baskets, trays or conveyor fixtures plus that lost in water removed with the work, are the storage losses involved during production operation of the immersion tank. The storage of heat in the bath, tank and tubes only becomes of interest for initial bring-up time calculations.

General heat losses comprise those from tank walls, water surface and water spray when such is used. Losses due to radiation and convection from tank walls are listed in Table No. 1 according to the amount of insulation used or its absence. Although not strictly exact for the purpose, the values shown for tank walls are used for losses from tank bottoms without substantial error. Likewise the radiation and convection losses from the water surface may be assumed with little error to be the same as those for a bare tank wall.

TABLE No. 1

HEAT TRANSFER TO 60° F. ATMOSPHERE FROM TANK WALLS

WATER TEMP. °F.	HEAT LOSS TO ROOM - Btu. per Hr. per Sq. Ft. of WALL AREA			
	BARE TANK WALLS	INSULATED 1" THICK	INSULATED 2" THICK	INSULATED 3" THICK
90	50	12	6	4
100	70	15	8	6
110	90	19	10	7
120	110	23	12	9
130	135	27	14	10
140	160	31	17	12
150	180	34	18	13
160	210	38	21	15
170	235	42	23	16
180	260	46	25	17
190	290	50	27	19
200	320	53	29	20
210	350	57	31	22
220	380	61	33	23

FOR OTHER ROOM TEMPERATURES THAN 60°F. MULTIPLY THE VALUES GIVEN IN TABLE BY THE FRACTION:

$$\frac{(\text{WATER TEMPERATURE °F.}) - (\text{ROOM TEMPERATURE °F.})}{(\text{WATER TEMPERATURE °F.}) - 60° \text{ F.}}$$

Evaporation losses are difficult to calculate due to the combined effects of surrounding atmosphere temperature, surrounding relative humidity and atmospheric movement. The matter of air movement is clouded by variable causes and their intensities. Bare or insulated tank walls, still or draughty rooms, covered or open tank tops all have their bearing. After exhaustive testing under conditions of average nature the radiation and convection losses, being more calculable, were subtracted to leave a residual loss as that of evaporation.

Evaporation losses from the water surface assume a rapidly increasing magnitude as the boiling point is approached. Figure No. 2 charts this value for still water with only natural internal convection currents, as compared to the same conditions but with forced agitation. It will be noticed that naturally agitated surface losses are only 60% of those under forced agitation at 180°F., but at 210°F. natural agitation attains 95% of the violence and surface losses of forced agitation. Needless to say, the evaporated hot water must be replaced with cold makeup water. This makeup heat has been incorporated in the values shown in Figure No. 2. Pounds of water can readily be deducted from it as follows. The Btu/hr./sq.ft. evaporation and makeup loss is divided by the sum of the 970 Btu/lb. latent heat of vaporization at sea level and the water temperature minus 60° to obtain lbs. water/hr./sq.ft. of tank surface. From this is obtained total lb./hr. evaporation makeup water for the tank.

As the work and its handling fixtures emerge from the tank there is an inevitable removal and loss of heated water from the bath. Cold makeup water must be added to maintain water level. Laboratory tabulation shows widely varying values for the relation between pounds of water so removed and square footage of work and fixture surface. These discrepancies come about from the differing factors of wet ability of the surfaces, porosity or roughness of the surfaces and magnitude of water fillets held in pockets or angular joints. Loss will not likely exceed ½ of 1% of the bath volume per hour for most work.

The final group of losses to be accounted for are those of the flue gases. If we adjust the combustion to perfect fuel-air ratio, flue loss resolves itself into evaluating the flue temperature. This temperature is a function of immersion tube length, diameter and fuel input rate. Reference is herewith made to the paper

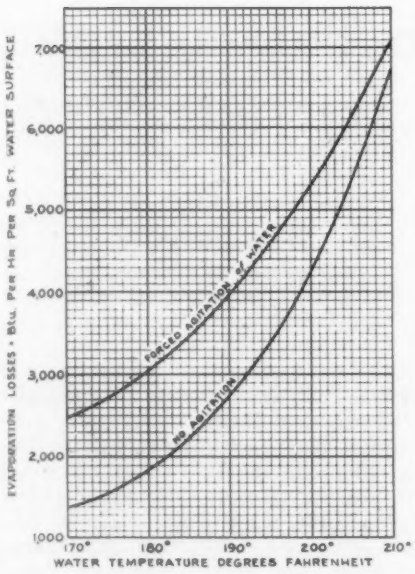


FIGURE No. 2

WATER SURFACE EVAPORATION LOSSES INCLUDING HEAT TO RESTORATION WATER

TABLE No. 2

EQUIVALENT FEET OF TUBE LENGTH FOR ELBOWS

PIPE SIZE	STANDARD OR MITERED ELBOWS	LONG SWEEP ELBOWS
2"	3	2
2½"	3	2
3"	4	2½
4"	5	3
6"	6	4
8"	7	5
USE 5 ELBOWS MAXIMUM AND PREFERABLY 3 MAX.		

by H. C. McRae, research engineer of the North American Mfg. Co. as published in the May 1943 "Iron and Steel Engineers." The mathematical derivation of flue gas temperatures obtained for immersion heating is there explained. Calculations were verified by testing with the use of a velocity type thermocouple.

Suffice it to say that the McRae paper shows a graph made by plotting flue gas temperature against effective feet of tube length divided by cfh natural gas flow for various tube sizes from 2 to 12 inches. Within a maximum fluegas flow of 1650 lb. per hour per sq. ft. of transverse tube area, the flow remains in the region of free convection. When the same open fired gas burners are fired at higher rates of flow experiment reveals their operation in a region of forced convection. Figure No. 3 is a nomograph resulting for flow rates about 1650 lb. fluegas flow per hour per sq.ft. of tube cross section.

TABLE No. 3

TOTAL TUBE LENGTH INCLUDING ELBOWS

PIPE SIZE	MINIMUM FEET	MAXIMUM FEET
2"	13	25
2½"	17	30
3"	19	35
4"	27	45
6"	38	62
8"	48	85

It is obvious that high firing rates even though at slightly reduced combustion efficiencies are more economical with a required size of equipment than are the low rates with considerably increased equipment sizes. It therefore is deemed most expedient to limit selection of immersion equipment to the forced convection zone. With these considerations in mind Table No. 2 has been set up from laboratory findings to show equivalent feet of tube length for immersion elbows. Table No. 3 gives tabulated minimum and maximum lengths of tubes to remain within the forced convection region.

After the calculation of storage heat and heat losses for come-up firing or production firing, Table No. 4 is offered as a quick reference form of the Figure No. 3 nomograph, after converting flue temperatures of the latter to Btu loss and thence to efficiency precentages. Thus the previously determined available heat requirement of any tank is readily converted by Table No. 4 to length and size of tubes, burner capacity and

TABLE No. 4

CAPACITIES OF IMMERSION HEATING TUBES

IMMERSION TUBE SIZE (IPS)	FUEL INPUT Btu/Hr BURNER MANIFOLD PRESSURE 3½" WC	6½" WC	TOTAL AVAILABLE HEAT, Btu/Hr. MIN TOTAL TUBE LENGTH 3½" WC (70% Ef'y)	6½" WC (66% Ef'y)	MAX. TOTAL TUBE LENGTH 3½" WC (80% Ef'y)	6½" WC (76% Ef'y)
2"	80,000	113,000	56,000	75,000	64,000	86,000
2½"	120,000	170,000	84,000	112,000	96,000	129,000
3"	175,000	250,000	122,000	165,000	140,000	190,000
4"	330,000	470,000	231,000	310,000	264,000	357,000
6"	700,000	990,000	490,000	654,00	560,000	750,000
8"	1,300,000	1,840,000	910,000	1,210,000	1,040,000	1,400,000

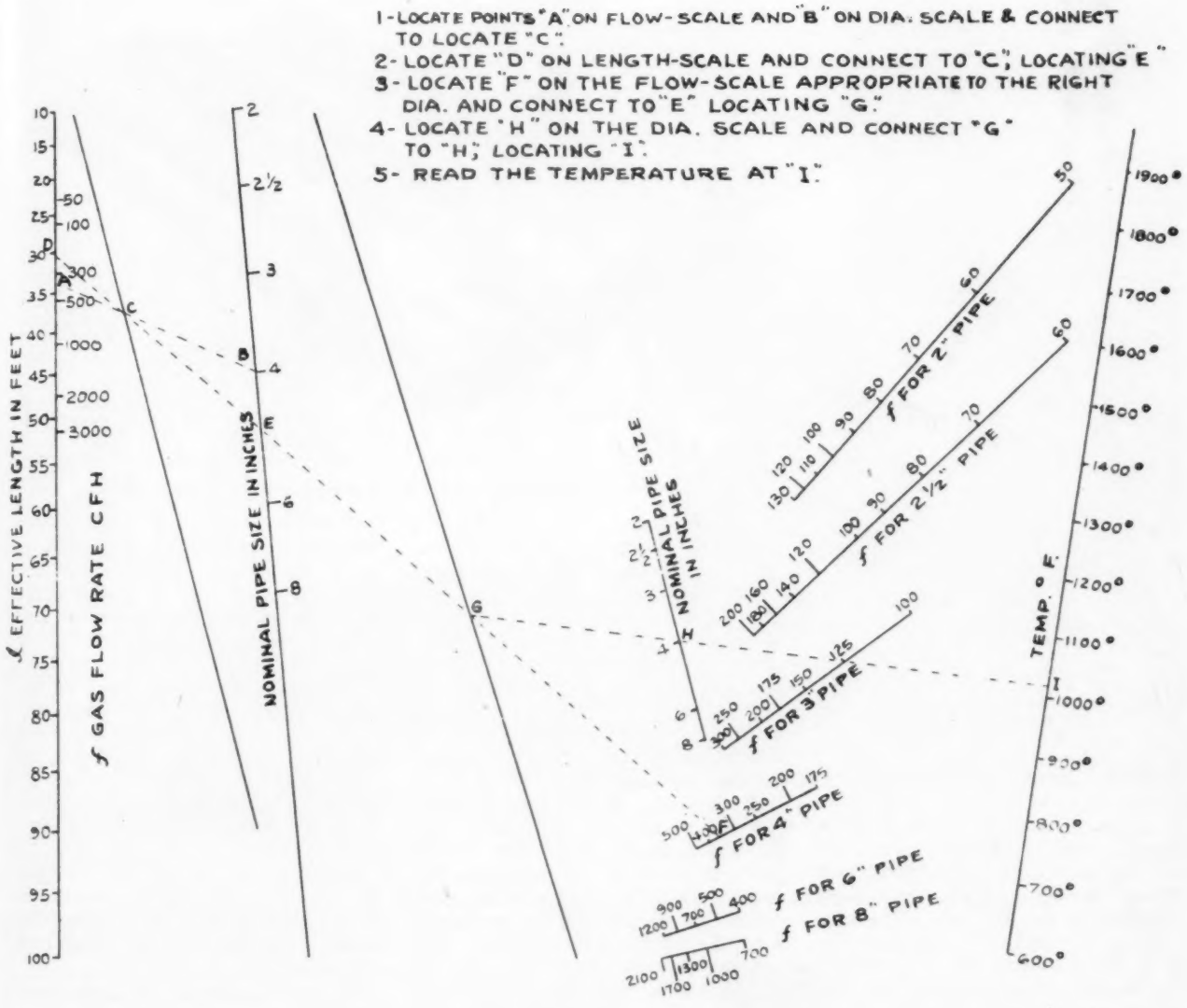

1-LOCATE POINTS "A" ON FLOW-SCALE AND "B" ON DIA. SCALE & CONNECT TO LOCATE "C".
2-LOCATE "D" ON LENGTH-SCALE AND CONNECT TO "C", LOCATING "E"
3-LOCATE "F" ON THE FLOW-SCALE APPROPRIATE TO THE RIGHT DIA. AND CONNECT TO "E" LOCATING "G".
4-LOCATE "H" ON THE DIA. SCALE AND CONNECT "G" TO "H", LOCATING "I".
5-READ THE TEMPERATURE AT "I".
EFFECTIVE LENGTH IN FEET
GAS FLOW RATE CFH
NOMINAL PIPE SIZE IN INCHES
NOMINAL PIPE SIZE IN INCHES
TEMP. °F.
FOR 2" PIPE
FOR 2½" PIPE
FOR 3" PIPE
FOR 4" PIPE
FOR 6" PIPE
FOR 8" PIPE

FIGURE No. 3

NOMOGRAPH FOR FORCED CONVECTION IMMERSION TUBE FLUE GAS

fuel-air mixture pressure required at the burner. The noted efficiencies assume correct burner adjustment and are for open flame-retention burners, firing into horizontal immersion tubes only. Longer tubes or down-flow flue gases must have sufficient stack, suction fan or ejector action to prevent backing out of hot gases at the burner port. Shorter pipes may be used but provide lower efficiencies.

Burners beyond the size of those shown cause backout of flue gases from tube entrances. Likewise, excessive pipe length or too many elbows cause flame backout. Oversize tubes allow channeling of gases through their cores and excessive air entrainment. Core busters afford a little improvement in such cases but the practice of oversizing tubes is sacrificial of tank space and installation costs with diminishing rates of thermal gain. This point will be graphically illustrated later.

Any substantially wide departure from tabled proportions will be conducive also to excess combustion noise. Causes are resonance from oversize tubes, excessive velocity differential between burner emission and tube flow, or localized combustion. Fuel-air ratio setting will cause much noise when incorrect. Generally speaking, higher pitched combustion noise, if its cause may be attributed to ratio error, is an indication of an overly lean mixture. Lower pitched combustion noise conversely suggests a rich mixture.

Burner brackets were developed to space the burners at the best possible operating distances from the tube entrances. Burners too close cause resonant noise, are short lived due to their proximity to heat and may be unstable due to flow disturbances at a critical zone of the burner mouth. Burners too distant may allow flame splash outside of tubes, and do not induce sufficient air to provide the long flame for best heat transfer.

Exhaustive testing with various combinations of tube diameters, lengths and fuel inputs brought arrival at the recommended values in the tables shown. To illustrate, Figure No. 5 is a group of curves taken from runs with 3" tubes. It will be observed that combustion efficiency increases as less input is used until the input becomes too low for installation economy of space and tubes.

Likewise, it will be seen that long tubes show little efficiency lost for large input increases.

Table No. 4 may be used for elevated temperatures even as high as salt baths at 900° to 1000°F., but available heats at that level will attain only 85% of the values shown.

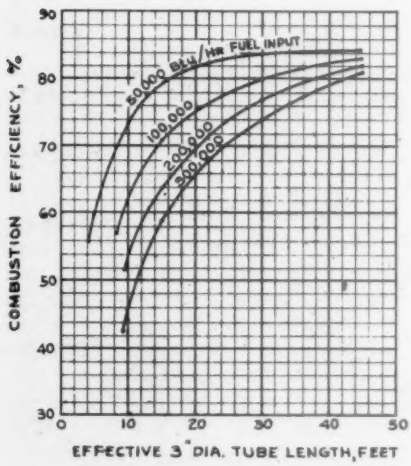


FIGURE No. 5
EFFICIENCY-INPUT-LENGTH RELATIONS FOR IMMERSION TUBES

Vertical firing entails additional inconveniences beyond the backing out of gases. The tube mouth must be shielded against splashover from the processing of work. Liquid level must be meticulously maintained to prevent overflowing into the tube. The tube entrance cannot be elevated above the liquid level without its proportionate overheating. Even though the tube mouth level is kept low, it must be vertically finned for rapid dissipation of heat to the water to prevent localized boiling and attendant splashover. Such boiling cannot be prevented above 180°F. bath temperature even in this manner. Most of the foregone ills can be eliminated by the use of an enlarged diameter tube mouth section but with manifestation of highly undesirable resonant combustion noise and further loss of valuable work area at the tank top. The only practical solution entails the use of a high temperature alloy extension at the tube mouth which will withstand overheating and prevent splashover but will add new thermal losses of its own.

In the event vertical space allowance for tubes in the bottom of the tank is restricted, more length of smaller tubes is required than can be allowed by Table No. 3. Multiple burners are then employed as in Figure No. 4, where are shown burners and their manifold, pilots and their manifold, burner and pilot mountings with incorporated tank flanges.

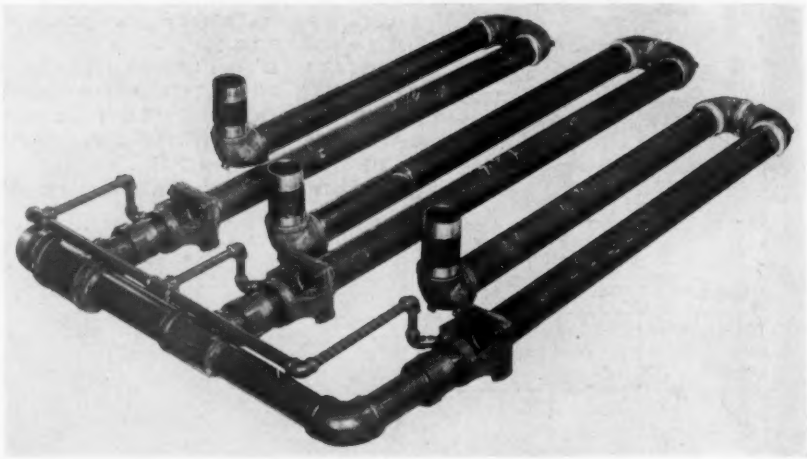


FIGURE 4.—MULTIPLE IMMERSION TUBES

Concern must be given the prevention of overheating tubes due to accumulation of sludge in the bottom of the tank or on the upper surfaces of tubes. With the provision of cleanout access ports in the tank, valuable dividends of tube life and heat salvage will be realized if a periodic cleaning schedule is maintained. Free natural convection of the fluid around the tubes is imperative to high thermal efficiency. Sludge should therefore not accumulate on the tank floor to such a depth that it can retard free movement of tepid water to the under surfaces of the tubes even though the sludge level has not as yet reached the tube undersurfaces.

Many materials may be immersion heated to advantage. Their limitations are dictated to a great extent by tube overheating or local overheating of the bath material at the tubes because of low heat absorption rates. Asphaltic compounds and many other materials of highly viscous nature will coke on the hot tube surfaces if initially heated too rapidly. Very slow heating from cold will allow bringing the bath to the point of allowing natural or mechanical agitation. Thereafter faster heating is possible without detrimental effects. Some materials such as sewage sludge have defied combustion fired immersion heating at all practical rates of firing because of their caking onto the tubes at even minimum firing rates. Where such delay in reheat time is expected, excellent results may often be realized by effectively insulating tank walls and applying tank surface covers for night holdovers. Reheating them is a mere matter of the restoration of a few degrees of temperature deficiency before resumption of production.

Where the bath is a substance of the nature of lead or salt which solidifies upon cooling, it is well to carry the fluegas riser tube upward inside the tank. By so doing there will be a relief provided for the expansion of the bath material as it is converted internally from solid to liquid during the early stages of the reheating process. The externally fired lead or salt pot first becomes molten externally and so relieves its fusion expansion without further attention. The reverse is true however of solids heated internally by immersion tubes.

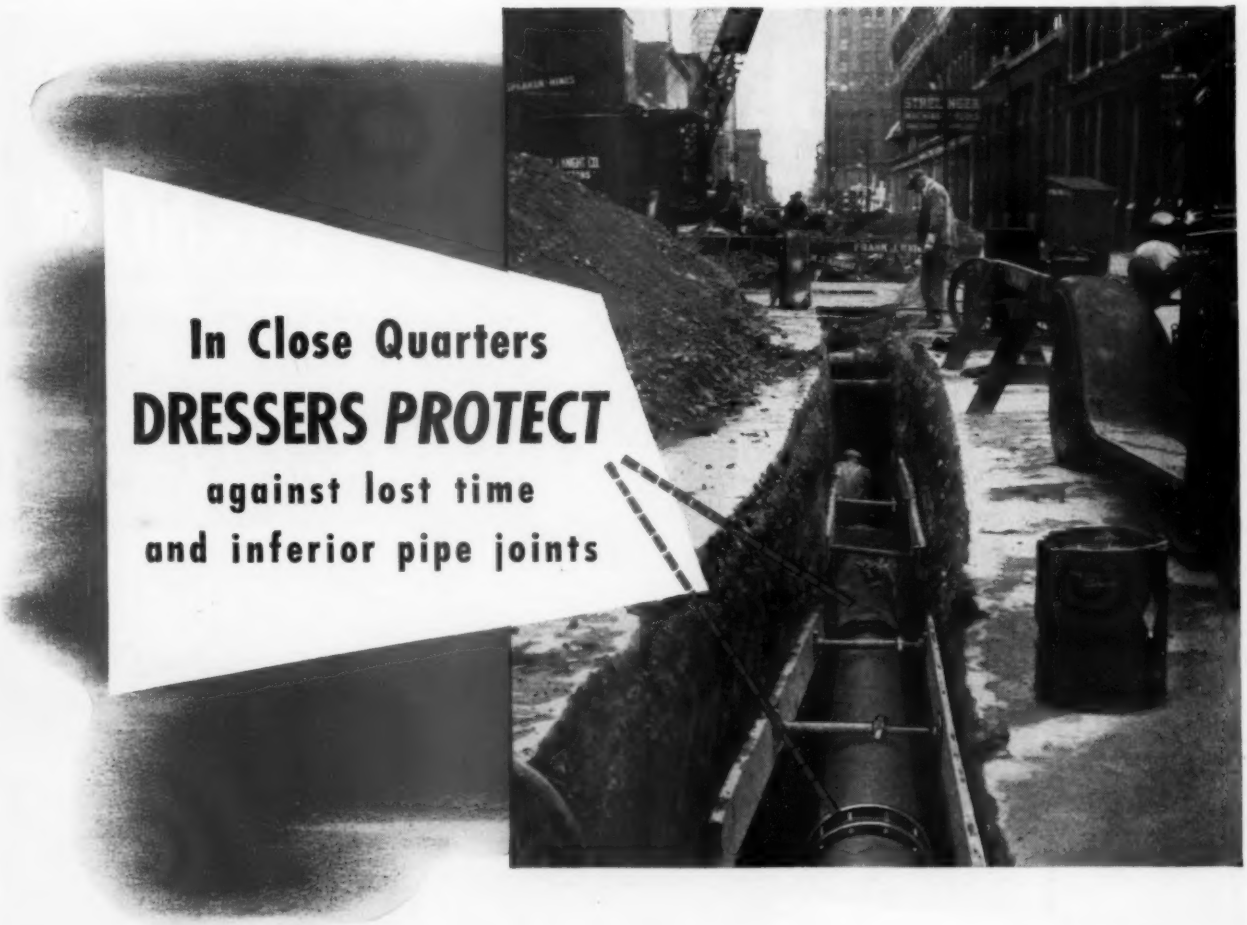
Dual-fuel firing of oil or gas through the same burner has been proven thoroughly practical for immersion with No. 3 or lighter oils and any clean gas.

Adds to Staff of Research and Development Division

Additional appointments to the staff of the Research and Development Division of Pittsburgh Consolidation Coal Company were announced recently by Dr. Howard S. Turner, assistant director of the division.

R. V. Safford will be in immediate charge of the company's coal gasification pilot plant at Library. For the past four years he has been with the Stanolind Oil and Gas in complete charge of the construction, maintenance and operation of the Synthol pilot plant at Tulsa, Oklahoma, developing the Fischer-Tropsch (gasoline from natural gas) process. He also supervised the chemical by-products plant for recovery of the alcohols and other oxygenated compounds from this process.

Thomas G. Reynolds was appointed chemical engineer on coal gasification. His experience includes several years of civil engineering, work in the construction of an oil cracking plant, four years with Continental Oil, five years as process and project engineer for Foster Wheeler, and war experience for Columbia and Kellex on the atomic bomb project.



In metropolitan areas, narrow ditches and cramped working spaces, due to traffic congestion and subsurface structures, often impede the rapid installation of pipe lines. This means loss of time and money.

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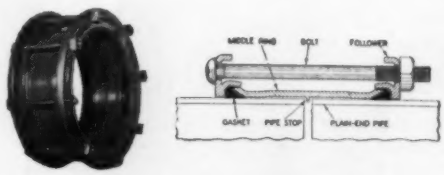

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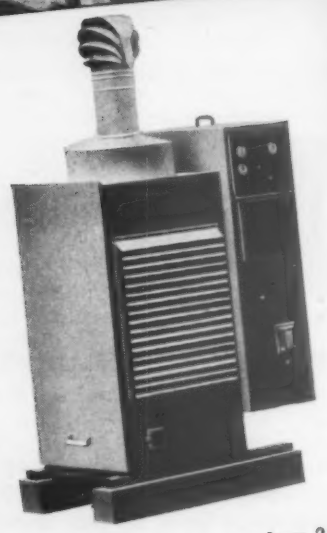

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L-P Gas Installations

By

Eric A. Flaschar

General Manager—Stacey-Dresser Engineering

Cleveland, Ohio

NEW L-P Gas Installations are finding more diversified uses each year. Today the users include the manufactured gas industry which relies on L-P gas to meet the large gas demands during winter cold spells; it includes the natural gas industry who also depend upon L-P gas to meet the winter demands; the industrial users who are shut-off from natural gas during the cold periods; the small communities that had no gas-making facilities or whose facilities have become antiquated; and the rural consumer who is beyond the gas main.

Of all gas-making methods presently available, L-P gas plants represent the minimum fixed capital charges; however, L-P liquid is more costly than other fuels used for gas manufacture. Economic studies have been made, including fixed capital charges and operating charges, and it has been determined that up to 15% of the total annual send-out, L-P gas is the most economical. When the capacity factor is greater than 15%, other gas-making processes may become competitive.

L-P gas has very definite advantages inasmuch as it represents a very simple means of gas manufacture, requires a minimum of personnel for operation, has low maintenance costs, and the initial investment is considerably smaller than any other type of facility. It also permits complete flexibility in operating range—that is, it can be instantaneously changed from practically zero to 100% of capacity.

In utilizing an L-P gas process, the following should be given careful consideration:

1. Proper sizing of the plant
2. Plant design
3. Btu control
4. Capacity range
5. Operating pressures
6. Safety

Proper Sizing of the Plant

In sizing, the plant can be considered in two main divisions, namely, storage and gas production.

The storage facilities required will depend upon whether the plant is to be operated on a year-round basis or for peak loads only. For year-round operation, a systematic delivery schedule can be arranged for the delivery of L-P gas. If commitments are scheduled for deliveries once a week, it would then be recommended that the storage plant be built to be capable of holding approximately two weeks' supply. Similarly, if commitments are on a two-week basis, then a month's storage would be recommended. This would insure ample storage for the proper operation of the plant. For peak load plants that are to be used during winter months only, the problem is of a somewhat different nature. With the present critical shortage of tank cars, it is practically an impossibility to obtain L-P liquid during these peak load periods. It becomes necessary, therefore, to anticipate the total L-P liquid requirements and properly size storage on this basis. It is recommended that for this type of operation, the storage facilities be a minimum of two-thirds of the total send-out for the year.

The proper sizing of the gas production equipment for a new community can be determined by the maximum hourly send-out required. If it is anticipated that the demand will increase within the next few years, it would be much more economical to design the plant for the anticipated demand. For an existing community where the base load gas is to be supplemented, it would be desirable to size the plant on the basis of the difference between the maximum hourly send-out and the base load supply.

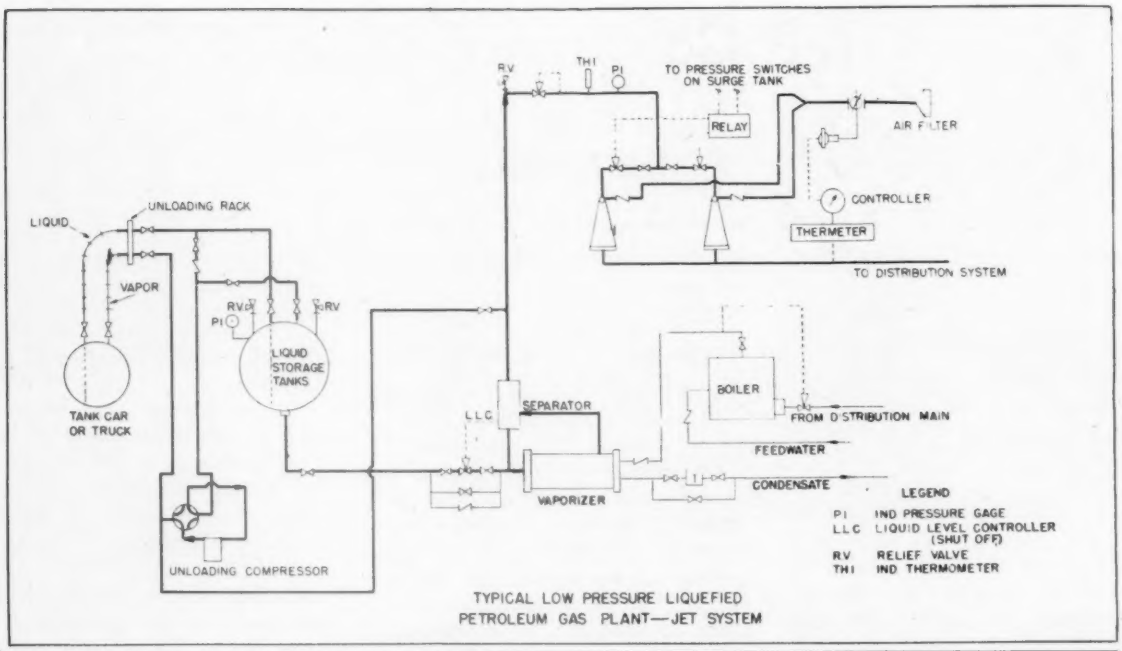
Plant Design

In designing an L-P gas plant, the same main divisions are to be considered, namely, storage and gas production.

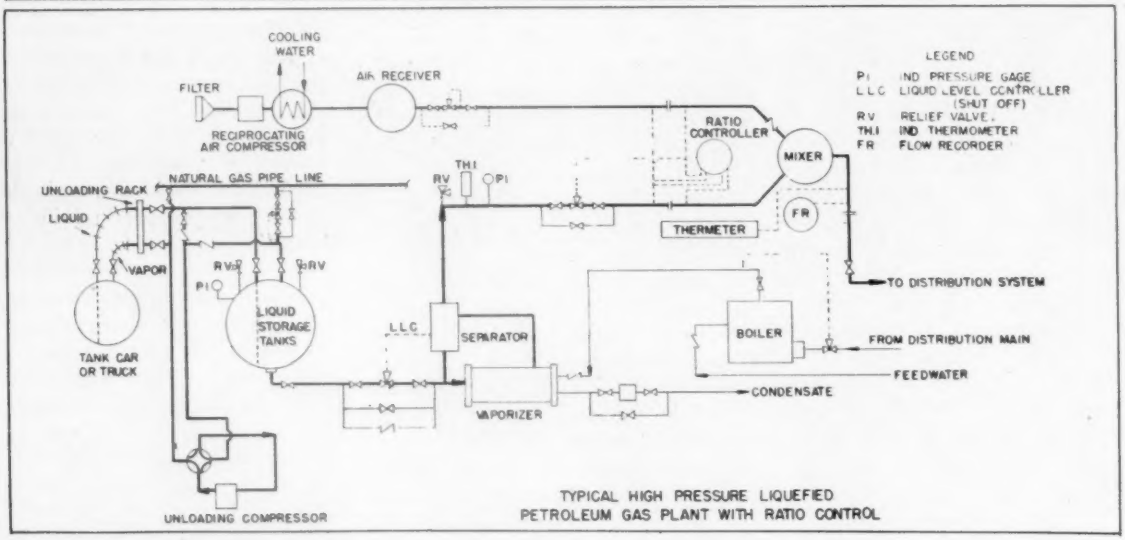
In the storage area we are concerned with the transfer of L-P gas from tank cars to the storage tanks, and then its transfer to the process plant. Several methods have been used for effecting L-P gas transfer, and at present the vapor method of unloading has received widespread acceptance by the industry. It eliminates the use of a liquid pump and permits recovery of vapor from tank cars. The use of a liquid pump should be considered as a second choice from a safety standpoint because no matter how carefully it is sealed, there is always a possibility of a leakage around the packing glands. Using a vapor compressor minimizes this hazard.

In gas production, it is recommended that an indirect heat exchanger be used in vaporizing the L-P liquid. This system may employ either steam or hot water, depending upon the conditions. The unit should be designed with sufficient disengaging surface; some means of separating any entrained liquid; a liquid level controller to prevent liquid from passing through the unit unvaporized; and relief valves to prevent excessive pressure build-up. It is also good practice to design the unit to superheat the vapors to some extent to prevent condensation in the vapor header.

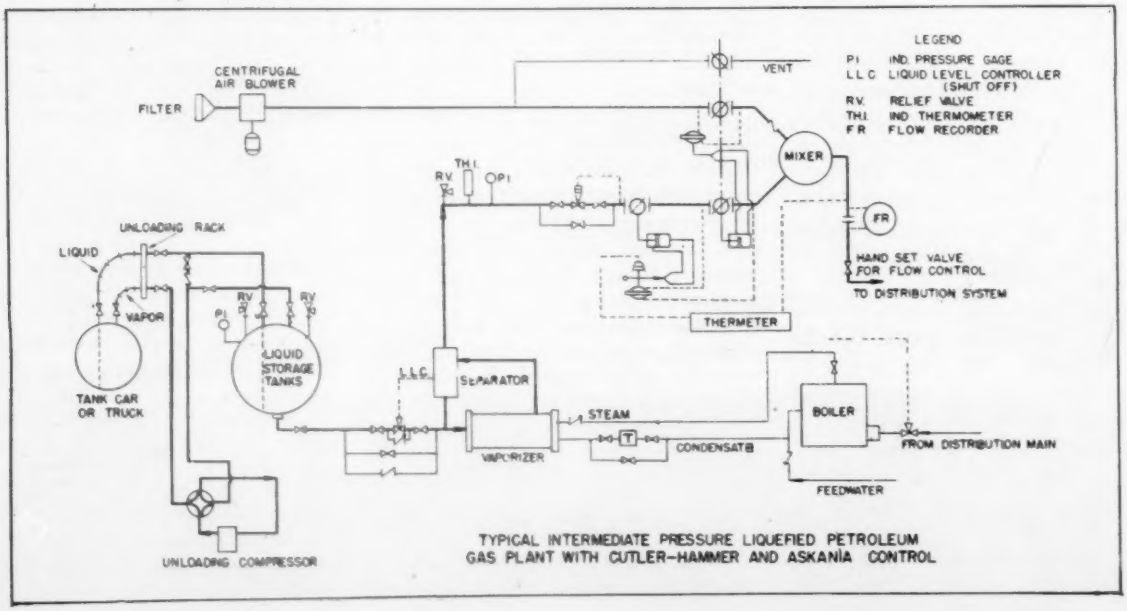
Many methods have been employed for blending the L-P vapor and air. For low pressure systems the use of the nozzle injector is quite common. This system takes advantage of the high pressure L-P gas stream which is injected into a nozzle, creating a low pressure region and thereby inspirating air. Another method of operation has been the use of a mixing valve where the L-P gas is reduced to zero back pressure and air is inspirated into this valve and then compressed to the distribution pressure. A third system of mixing is to compress the air independently to the desired pressure, maintaining the L-P vapor at this



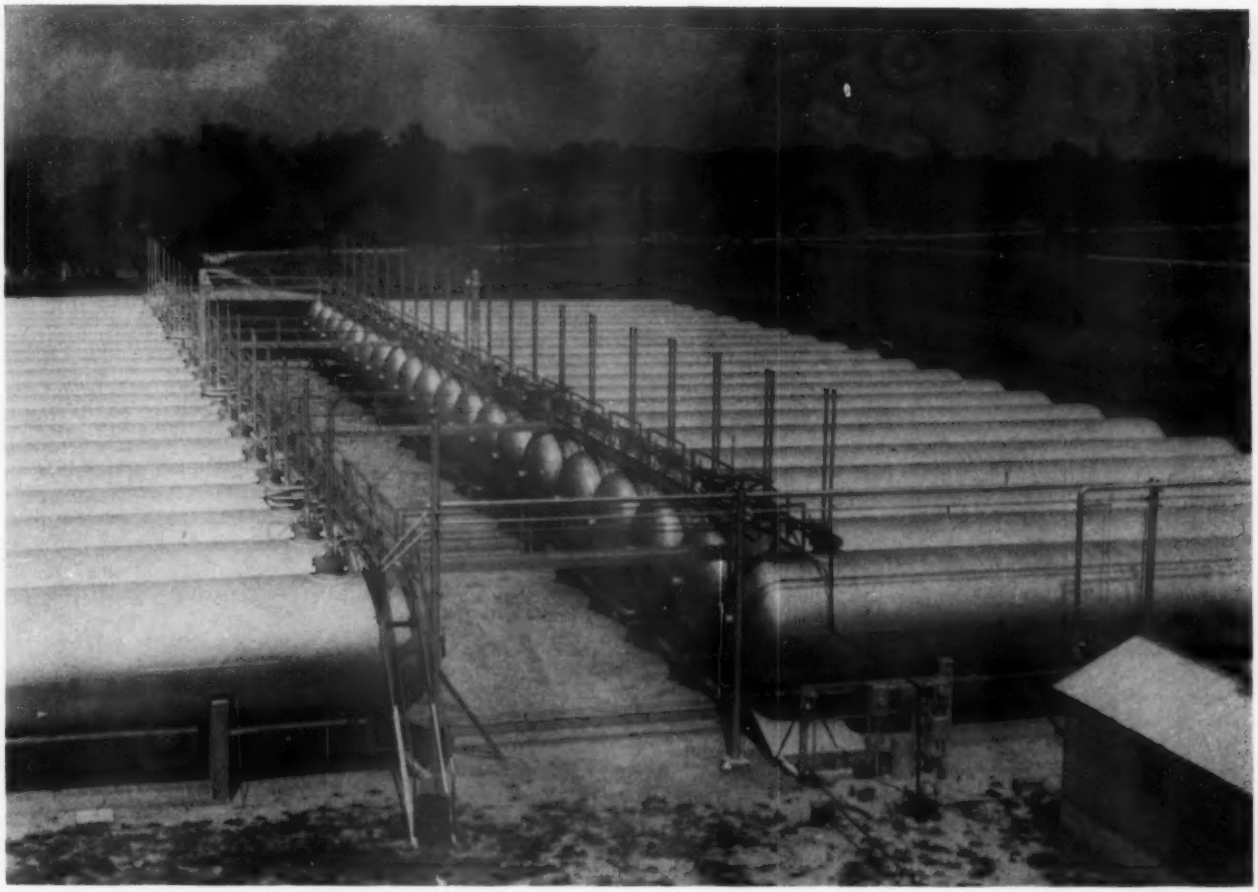
TYPICAL LOW PRESSURE LIQUEFIED PETROLEUM GAS PLANT—JET SYSTEM



TYPICAL HIGH PRESSURE LIQUEFIED PETROLEUM GAS PLANT WITH RATIO CONTROL



TYPICAL INTERMEDIATE PRESSURE LIQUEFIED PETROLEUM GAS PLANT WITH CUTLER-HAMMER AND ASKANIA CONTROL



PARTIAL VIEW OF TANK FARM FOR ONE OF THE WORLD'S LARGEST LIQUEFIED PETROLEUM GAS PLANTS.

same pressure level and then mixing by metering one flow with respect to the other through fixed or adjustable orifices. The type of system selected for mixing would be dependent upon the discharge pressure, the capacity range of the plant, and whether manual or automatic Btu control is to be employed.

In designing the plant, it would be desirable to design for both propane and butane operation at a relatively small increase in investment cost. Due to market conditions and the critical demand for tank cars, the gas utilities may not always be able to choose whether they want propane or butane, but often must take what they get. For butane operation and for a fixed send-out, the air requirements are greater, more steam is required, and more vaporizing surface is necessary. It has the advantage of having a greater heating value per gallon, and for the same installed storage more Btu's can be stored. The storage tanks and equipment, however, should be designed for propane which has a higher vapor pressure at any given temperature.

BTU Control

When no Btu control device is used, a deviation of plus or minus 5% of thre heating value is not unusual due to changes in the atmospheric conditions such as temperature and relative humidity, regardless how accurately the adjustment of proportioning has been set. The Btu value of the gas may be controlled manually or automatically. For a plant operating on a yearround basis, it is definitely desirable to have automatic control, thereby eliminating constant supervision. For a plant operating for peak loads only, it is optional whether manual or automatic control is used. In order to obtain accurate Btu control, it is necessary to use an instrument to measure and record the Btu value of the gas constantly. The selection of the instrument would depend upon the accuracy required.

Capacity Range

The L-P gas plant can be designed to operate at a fixed rate or at a variable capacity from 3 to 100%. It may also be designed to float directly on the distribution system or to operate on a controlled send-out. The proper selection of the capacity range would depend upon the individual installation. For a new community, it would be desirable to have 100% capacity range and to have the system operate automatically upon demand. When L-P gas is to be used to supplement the base load gas, however, it may be desireable to manually control the flow. For systems requiring 100% capacity range, the use of adjustable orifices for proportioning would be recommended. For systems requiring 25 to 100% capacity range, fixed orifices may be used in the proportioning operation, and for systems to be operated at a constant send-out, the injector system is satisfactory. To obtain greater flexibility utilizing the injector system, multiple units may be employed and the degree of flexibility would depend upon the number and size of the units.

Operating Pressure

Plants have been designed for pressures from practically atmospheric to 300 psig. It has been determined in various economic studies where compression is required, that a considerable saving can be effected in the initial and operating costs by compressing the two fluids independently. In the case of using propane-air gas for augmenting natural gas, a saving of 50% of the power costs can be realized. In augmenting manufactured gas, the saving is somewhat less as the percentage of air is greater.

Safety

The National Board of Fire Underwriters' Pamphlet No. 58 should only be used as the very minimum design basis. The designing engineers and the operators of L-P gas plants should fully understand the hazards within a plant, the chances of their occurrence, the possible damage from the occurrences and the precautions to be taken against these possible occurring hazards.

It must be remembered that both propane and butane are volatile and inflammable liquids and form explosive mixtures. The explosive range for propane is from 2.4 to 9.5 per cent, whereas for butane it is from 1.9 to 8.5 per cent. Both of these materials being heavier than air, have a tendency to settle and cool at low points.

Many types of safety features can be incorporated into the process plant, depending upon the actual amount of operating personnel. If the plant is to be entirely automatic, safety features for any failure that may occur are required, whereas a plant having supervision at all times may reduce the number of safety features. Alarms, automatic shut-off devices, safety relief valves, and controls for excessive pressure build-up in the system or for flow failure of one of the operating mediums can be and should be used where the situation demands same.

Let it be remembered that each L-P gas plant installation is a problem of its own and must be fitted into the gas facilities in a way that maximum return can be expected from the investment, that the flexibility is in accordance with the operating requirements of the particular utility, and that the safety precautions are taken into consideration. Also that the location of the plant and all possible damage not only from an actual failure but also from what might be termed as misbehavior of the plant, are taken into consideration.

Two Research Publications Issued by Laboratories

Publication and release of technical studies on flame impingement and effects of ambient pressure in combustion chambers have been made by the American Gas Association Testing Laboratories. Results of these studies, sponsored by the Committee on Domestic Gas Research, are presented in the form of a research bulletin and a research report.

Research Bulletin No. 43, "Investigation of Extent of Gas Flame Impingement Allowable for Satisfactory Combustion" presents data on factors affecting combustion due to flame impingement such as type of gas, variations in materials and surfaces impinged upon, and temperatures of such surfaces. Experimental results obtained on several burners are given to illustrate effects of these factors on combustion.

Research report 1080, "Research in Effects of Ambient Pressures in Combustion Chambers of Contemporary Appliances on Primary Air Injection, Place and Other Gas Burner Operating Characteristics" round out earlier studies made of the effects of ambient temperatures.

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High BTU Oil Gas

By
W. E. Steinwedell
Chairman of Board, Gas Machinery Co.

THE heating value of manufactured gas for City distribution has varied only slightly for a great many years and it was only when natural gas of about 1000 Btu was first used that some of the advantages of a high Btu gas were apparent.

Coal gas of between 500 and 600 Btu per cubic foot was first made extensively and this was followed by carburetting blue gas with oil gas to about the same heating value as coal gas.

Later, oil gas was made in the western part of the United States and this was reformed down to about the same heating value as coal and carburetted water gas. The high heats and necessary low rates of gas made necessary to reform the oil gas to this low heating value resulted in the production of considerable lamp black or carbon which had to be burned under the boilers or briquetted, used in water gas generators or sold as fuel.

If this early low Btu oil gas had been made of about 1000 Btu per cubic foot, there would have been very little or any conversion work on customers' appliances when natural gas was afterward piped to the large and smaller Pacific Coast cities.

Several years ago The Gas Machinery Company perfected and patented an oil gas process using water gas sets with fuel fired generators and producing an oil gas of about 1000 Btu per cubic foot in the carburetter and superheater in a superheated steam atmosphere and no injurious lamp black was made.

This process was successfully installed and operated on existing water gas sets where natural gas had displaced manufactured gas. The converted sets were then used during peak loads and for emergency service and by converting and keeping these former manufactured gas plants operative, the investment therein was kept in the rate base.

Later, The Gas Machinery Company brought out a Twin-Generator Oil Gas Process whereby the fuel fired water gas generator was rebuilt into an oil gas generator and the carburetter also similarly reconstructed. This process entirely eliminated the use of solid fuel and greatly increased the capacities of the sets.

These twin generators are heated simultaneously with air blasted oil burners and the heat transmitted to the superheater checker brick. During the ensuing make period, steam and gas oil or sufficiently light distillate oil are admitted to the tops of the generators producing an oil gas which is reformed in the superheater to the desired heating value, (about 950 to 1050 Btu) with proper specific gravity, chemical composition and flame characteristics required. No injurious carbon is produced.

The thermal capacity of a carburetted water gas set is about doubled when converted to the Twin Generator Oil Gas Process, all labor for solid generator fuel handling, charging, fire clinkering and ash handling necessary in the production of carburetted water gas is entirely eliminated and the oil gas set can be run 24 hours daily.

An oil gas plant is operated by a minimum number of men and is particularly adapted to be built out doors as it requires no charging of solid fuel or clinkering of fires or handling of ashes, and a building investment is eliminated. A small heated house is installed over the operator, gauge board, automatic control and oil meters.

The quality of oil required for heating the set and producing gas per MCF and the gas analysis varies with the amount of blow running from about ten and one-quarter to twelve gallons per MCF. When oil gas is entirely substituted for natural gas, a minimum of blow run should be used but when mixing oil gas with large quantities of other gases or for other purposes where a somewhat higher specific gravity does not affect results, blow running can be used, the amount depending on the local conditions.

Oil gas of about 1000 Btu per cubic foot has a large number of applications but the principal ones which concern gas companies are the following:

Application No. 1

Substitution of oil gas for and addition of oil gas to the natural gas supply.

Application No. 2

Using a mixture of about 44% oil gas of about 1030 Btu and about 56% of producer gas of about 150 Btu to produce a final gas of about 540 Btu and .78 specific gravity.

This mixture is of greater volume and cheaper than straight carburetted water gas of about 540 Btu made under the same material and labor costs.

As an example, with two carburetted water gas sets, one set can be converted to make 1000 Btu oil gas, requiring no clinkering of generator and the other set can operate with an up blow run of about four minutes with some steam below the grates and a one minute down run with full amount of steam, only stopping the continuous gas making process when fueling the generator and clinkering and thus producing a final producer gas of about 150 Btu. The final mixture of 1000 and 150 Btu gases amounts to more gas than if straight carburetted water gas had been made, costs less to produce and requires only one-half the amount of clinkering.

Application No. 3

Conversion of existing water gas set or sets or construction of new equipment for the production of oil gas of about 1000 Btu and mixing this oil gas with the existing gas for the production of a final City gas of a higher than standard heating value to take care of peak loads or as a permanent method of production to increase plant and distribution capacity without a conversion of customers' appliances.

This application No. 3 as above described is necessary to accomplish the desired result of increasing the heat content in the gas as the existing carburetted water gas equipment, except in unusual cases, has not sufficient capacity to gasify and fix the additional oil required to make the higher Btu gas.

Electricity is not sold on an amperage or volumic basis alone but is sold on a kilowatt basis which means the amperage times the voltage or the volume times the pressure. In a like manner, the rate regulating bodies should allow gas to be sold on a similar basis which is the volume times the heating value. This can be expressed in therms (100,000 Btu) or in a "City Unit," as has already been done, which is 1000 cubic feet of gas multiplied by the existing heating value standard. If the heating value standard were 540 Btu per cubic foot, the "City Unit" would be 540,000 Btu which could be sold at the then existing gas rates.

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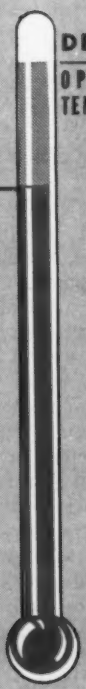

Although operating temperatures in water gas generators are seldom too high for the refractories used, other severe conditions present tend to reduce the service life of natural mineral refractories. Much can be gained both in operating efficiency and long lining life by employing a Special Refractory. Such a refractory is the Norton CRYSTOLON line of bricks and shapes which stand the gaff in gas generator operation. Made of silicon carbide plus a minimum of refractory bond, these brick are very dense in the sense of low porosity and permeability, physically strong, chemically stable and highly refractory. They are unaffected by molten coal ash slag because it cannot penetrate their dense surface. CRYSTOLON linings often pay for themselves the first year by savings in cleaning costs alone. They will usually give from 10,000 up to 25,000 hours of trouble-free service . . . depending upon operating conditions.

NORTON COMPANY **WORCESTER 6, MASS.**

Application No. 4

Substitution of oil gas of about 1000 Btu for manufactured gas of about 500 plus Btu. This method, practically doubles the plant, holder, gas compressor and distribution capacity and at an expense, including conversion of the water gas equipment and customers' appliances of only a small percentage of what it would cost to double the plant and distribution capacity on the present carburetted water gas basis.

The fixed charges of interest, depreciation and taxes on a manufactured gas plant and distribution system for a 500 plus Btu per cubic foot gas, generally amounting from 30 to 50 cents per MCF of gas made, would be cut about in half when the thermal output of the plant doubles, and by doubling the thermal output of the installation any additional plant or distribution expenditures for a number of years is eliminated.

The cost of compression is also about cut in half as only about half the volume of gas is sent out when the heating value is nearly doubled and the hours of make daily are correspondingly reduced.

It would seem that a high Btu gas will for some time solve the economic problem of supplying large additional volumes of heating loads in gas companies supplying carburetted water gas and whose plant and distribution systems are overloaded.

Extending present water gas plants by installing additional water gas apparatus and auxiliary equipment, will in time mean about a double investment in plant and distribution with greater production and distribution costs and the manufactured gas business to endure and meet future competition must give good and dependable service and keep investment, production and distribution costs down to a minimum.

Applications Nos. 2, 3 and 4 as above outlined, help to accomplish these desired objectives.

Summarizing, the advantages of manufacturing and distributing an oil gas of about 1000 Btu, are as follows:

1. The thermal capacities of the existing plant, storage holders, compressors, distribution system and customer's metering equipment are about doubled, and, therefore, used to their maximum efficiency.
2. Solid fuel and ash handling and clinkering labor are eliminated, so the plant is quickly started.
3. There will be substantial future savings as the load grows due to reducing the fixed charges of interest, depreciation and taxes and no such savings can be made with current processes.
4. Plant and distribution capacities are quickly and economically increased with the lowest investment costs of any means now available.
5. Sets can be operated 24 hours daily and the operation is much cleaner and easier than that of any other gas generating equipment.
6. The plant and customers' appliances conversions are the same as would be made if natural gas were supplied and when steel pipe and compressor stations or liquid natural gas plants and tankers for the liquid natural gas are available a supply of natural gas can be delivered to the northeastern seaboard of the United States at acceptable prices to gas utilities and the manufacturing industry.

The foregoing is a short resume of the history and development of manufactured gas and particularly high Btu oil gas production and, of course, there are a number of other means of producing gas economically when the local conditions exist for such processes and these processes consist in reforming natural gas, reforming refinery gas, reforming liquid petroleum gases, carbonizing coal, other processes and the mixing of various gases but these have all been elsewhere described in great detail.

Paper presented at Midwest Gas Assn., Ames, Iowa, Sept. 9, 1947.

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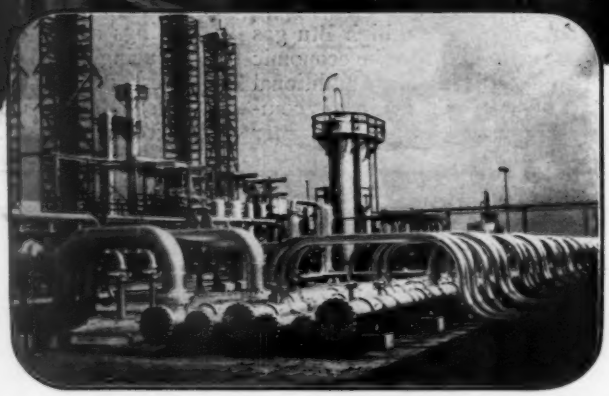

PRESSURE MAINTENANCE . . . crude stabilization . . . gas dehydration . . . gasoline extraction . . . crude topping. This is the broad variety of operations performed at the modern plant of the Compania Consolidada de Petrolea in the Jusepin area of Venezuela. Here, seven Cooper-Bessemer GMV's, modern V-angle units, meet all compressor requirements; can handle up to 25 million cubic feet of wet gas daily through 3 stages of compression, while supplying 15 field injection wells at a maximum 2500 psi. All seven GMV's, one vacuum and six 3-stage compressors, are 6-cylinder, 600 hp units. If you are not entirely familiar with GMV features and advancements, send for the new GMV Bulletin No. 337 and have at hand complete, comprehensive information on these outstanding 400, 600, 800 and 1000 hp units.

INSERT: General view of compressor manifold piping, gas dehydrating unit and towers at plant of Compania Consolidada de Petrolea, Venezuelan subsidiary of Sinclair Consolidated Oil Company.

ABOVE: Battery of seven modern Cooper-Bessemer V-angle units, one vacuum and six 3-stage compressors, each a 6-cylinder, 600 hp GMV.

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The Pacific Coast as a Market for Gas Space Heaters

By
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Executive Vice President,
Dearborn Stove Co., Dallas, Texas

GAS SPACE HEATER manufacturers face a market in California, Washington, Oregon, Arizona and Nevada which can potentially absorb 3,111,198 units. This total is a conservative estimate based on 1940 census figures and includes the replacement needs of homes using gas heat and those homes using wood or coal which might be converted to LP-Gas.

If we project population and dwelling unit data on the premise that in 1940, 73.4% of the homes in these states were without central heat and that 22.2% of new dwellings built in the U. S. between 1940-45 were constructed in this area, the potential can be upped another 1,389,131.

California represents by far the greatest share of possible sales in this area. In 1940, 97.61% of the homes in the five-state area using gas for space heaters were in that state. So, too, were 42% of possible future LP-Gas consumers; homes now using coal or wood. There are 29 LP-Gas producers in the state of California which indicates the growth in the use of this fuel. As no figures are available to indicate the number of individual installations of LP-Gas, any estimate of possible heaters in use could be only surmise which is not of much value in assaying potential sales.

Any appraisal of market potentials must necessarily be a projection of facts and figures whose reliability is unquestioned. For the purpose of scanning possible future sales of gas space heaters in the three West Coast states, as well as in the economically related states of Arizona and Nevada, I have used statistical data from the Bureau of Census, the Federal Power Commission, and other reliable publications as the basis for my analysis.

Manufacturers who plan to market gas space heaters in this area might be interested in a state-by-state analysis of the market as our research department has visualized it.

Washington

The State of Washington seems of comparatively small present or future value to gas stove manufacturers seeking sales outlets. The tremendous supply of low cost electricity provides the primary fuel in use and it seems unlikely that other types will seriously alter this situation.

In 1940 only 1,450 homes used gas as a fuel for space heating. This represents but .4% of the total number of dwellings. Only manufactured, butane, and butane-air gases are served in the State and total *heating* loads are comparatively light.

Liquid fuel enjoys a far superior position within the state as is evidenced by the fact that 48,310 or 14.2% of homes are heated by this means.

Some 80% of homes which have no central heat, 274,447 in 1940, now use wood or coal which offers a potential to LP-Gas or liquid fuel space heaters.

Using the industry average of 8% replacement annually only 360 space heaters are required in homes now using gas for space heating. The potential for LP-Gas in Washington lies in those homes using wood and coal for space heating. Applying the yardstick of 3.1 units per home, 850,786 heaters could be conceivably sold, provided, of course, that the LP-Gas business in the state is greatly expanded.

Oregon

Only through an increase in LP-Gas installations is there any likelihood of an increase in the use of gas for space heating in Oregon. In 1940 only 2,052 homes in the entire state used gas for space heating, only 1% of the total. There is no natural gas served in Oregon.

Again, dependent upon wide expansion of LP-Gas distribution, a possible market for gas space heaters or else liquid fuel heaters exists in 189,726 homes using coal or wood in 1940. A potential of 569,858 units could be marketed in Oregon should a sufficiently enlarged LP-Gas program be completed.

As it is, only a replacement total of 509 gas space heating units can be sold in the state. This represents a dollar volume of only $7,136.00, based on an average dollar price of $14.02 per unit.

California

The population of California has increased nearly 40% since 1940 to a total at present of 9,665,000 inhabitants. In 1940 homes without central hea' numbered 1,572,592 or 75.7% of those in the entire state. Since 1940 many thousand new dwellings have been constructed and these largely in areas where natural gas is the usual fuel.

Gas space heating is provided in 961,797 homes, which is 61.2% of all residences. Here indeed is the core of the Pacific Coast market, with 8% of the total of United States natural gas reserves being a guarantee of continued reliance on gas space heating.

The extent of LP-Gas installation is unknown, but from the number of LP-Gas producers active in the state, it seems safe to assume that this potential outlet for gas space heaters is growing rapidly.

Exclusive of the individual LP-Gas installations we find that there were, in 1940, a total of 2,981,571 gas space heaters in use. Applying

the yardstick of 8% of units yearly, it becomes evident that 238,526 space heaters are required annually for replacement in California.

The sales possible should those homes now using wood or coal convert to LP-Gas amounts to 1,206,098 units. A most conservative sales manager can envision the impact of a 40% population increase on these figures.

Nevada

Nevada could consume 17,798 gas space heaters if all homes now using wood or coal were to be converted to LP-Gas. This seems a rather fantastic possibility from the present viewpoint, since 23.9% of homes using other than central heat consume oil as the heating fuel. However, an aggressive LP-Gas program could gain many adherents to gas as a fuel and thus pave the way for considerable sales of gas space heaters from the 67% of homes heated with wood or coal.

At present an annual replacement sale of only 48 heaters within the whole of the state is not sufficient business to warrant the expense of having a salesman canvass the territory.

Arizona

Of the 115,827 Arizona homes (92.1%) without central heat in 1940, 19,654 were using gas the space heating fuel. Gas ranks third in use among the four types of fuel. The new California pipeline crossing the state may increase the use of natural gas, but here again the largest potential will accrue as LP-Gas installations spread.

The 51.1% or 59,666 homes now using wood or coal is the potential for LP-Gas or liquid fuel. A possible 184,965 gas space heaters would be required to supply this potential should LP-Gas be chosen to replace the solid fuels. Replacement of 4,874 units is required annually to replace worn out heaters in homes now using gas.

Migration to Urban Areas

The Bureau of the Census has released information disclosing that the population in the Pacific States area is moving from rural farm areas to urban centers. This fact is of primary interest to manufacturers of gas space heaters. It demonstrates that the fuel supplier has a major task ahead of him in providing for heating needs. It is to the interest of gas heater producers to encourage the spread of natural gas systems, of manufactured gas distribution, and especially to facilitate greater use of LP-Gas in urban and rural-urban areas. It seems evident that the spread of LP-Gas installations must precede any considerable growth in the market for gas space heaters in the five states herein discussed.

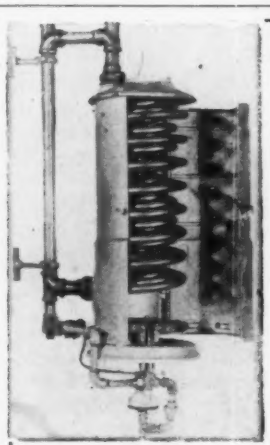
New York State Natural Gas Corp.

The Federal Power Commission announced Sept. 10th it has authorized New York State Natural Gas Corporation to construct and operate facilities which will enable it to receive deliveries from the Big and Little Big Inch pipelines.

The company has been issued a certificate of public convenience and necessity permitting construction and operation of a new 6,000 horsepower compressor station and connections and 1.1 miles of 20-inch connecting lines, overall capital cost of which is $1,313,785. The cost is to be financed by issuance and sales of capital stock to New York State Natural's parent company, Consolidated Natural Gas Company.

These facilities, which the FPC has already authorized on a temporary basis, are designed to enable New York State Natural to add up to 75,000,000 cubic feet of gas per day to its present capacity.

New York State Natural's projected connection with the Inch lines is in Greene County, Pennsylvania.



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AutomatiC Performance

By
J. W. Lea
Sales Manager
Atlanta Gas Light Company

The "Gas Has Got It" campaign is under way. It is designed to tell the housewives of the country about the automatic and other features of the CP range. This plan has to have the cooperation of the sales department of every gas company. In his paper, presented at a recent meeting of the Southern Gas Association, Mr. Lea points the way to full cooperation, by every individual company.—Ed.

GERALD STEDMAN, a writer well known in gas publications, made a talk to a group of sales managers. He called attention to the fact that ever changing conditions often cause us to lose sight of never changing principles. There is abroad in our land today those who tell us to disregard the profit motive in business. They would have us believe that to make a profit is by some queer twist of reasoning contrary to the best principles. Yet there is a never changing principle of nature which provides that one grain of corn planted in good earth will return a profit of several ears of corn each with hundreds of grains.

One of our basic laws is that of natural selection. This is a never changing principle. The cactus, with its enormous water storing capacity, is found on the desert where any plant to survive has to be able to do without water for months on end. This law of natural selection applied to business today can be interpreted as the law of stimulative competition.

Competition between fuels produces a healthy situation, particularly for that fuel which adapts itself most nearly to the conditions confronting fuels. Be sure you remember what competition looks like. We in the gas industry are going to have it in large volume. Let's be stimulated by it, and act constructively.

Let's recognize our competition—be resilient—fast on our feet, and act constructively. To act constructively we need first to do some analyzing. What is the situation we face today? You will recall that at one time Joseph was a mighty well known man in Egypt. He was a one man brain trust, and yet we read a few chapters later, "There came a king who knew Joseph not." Even a king hadn't even heard of Joseph who just one generation back had practically run the entire country. How many of your customers know gas ranges not? How many of your prospects know gas ranges even less?

Have you checked up on the people in your organization lately? Our personnel director tells me that 35 to 40 per cent of the members of our company family have joined us since 1941—six long weary years. Not one of these people has known what it is to give real A-1 service to a customer. "We're sorry, madam, but we don't have a valve of that type in stock and don't know where we can get one"—"We're sorry, sir, but we're all out of 1¼" pipe to run that service to your new house." You know what I mean. I don't intend to take one iota of credit away from the wonderful job service departments have done under most trying circumstances, but, we must be realistic. We must face the fact that even our people who were with us back in the days of real competition and real service have forgotten. How many of your present day organizations can tell a clean-cut sales slanted story about just what is an automatic gas range built to "CP" standards? Can you do it? I'm not sure I could even though I have done a lot of brushing up in preparation for this talk.

Appliances are still scarce and maybe we can get away with our wartime operations a little longer, but time is running out, and fast. "There is a tide in the affairs of men which taken at the flood leads on to fortune." Tides ebb quickly—before we know it. Open doors close and there are plenty of Richards who won't open them again. Many men, many companies and even great industries have found that some failures are final. There is no need for us to fail at all.

Birth of CP

Our great gas industry has also been blessed with probably more than its share of big men—men of vision, men of action. A group of men of this type got together back in 1937. Electric ranges were beginning to come along, faster and faster. They were modern, they needed no matches to light them, they were automatic, they did everything but peel the onions and scrape the carrots. It has always seemed to me that here was a time when failure could have been final. But these men did not fail. They labored long, and earnestly. They labored efficiently and the "CP" standards for gas ranges were born.

Through the intervening years and even now there have been those who honestly believed for instance that the competition from quality electric ranges could be met best by selling lower and lower priced gas ranges. Many of you will recall the last days of the Model T. Chevrolet and other manufacturers were building big car quality and big car convenience into their light cars. Ford continued to sell the Model T, but there came a day when the public stopped buying Model Ts just because they were cheap. Ford saved the day with the Model A and now the 1947 Ford has the quality and the convenience items that keep them right up with the other leaders.

Then there have been those who have said that this range is like a "CP" except for automatic ignition. Soon there will be those who will say this range is just like a "CP" except for automatic time control. Then we have a certain group who says, "Why try to sell automatic ranges, people won't buy them and even if they do they will never use them."

Top Flight Salesman

I am going to attempt to recall for you an article which appeared in the Saturday Evening Post a number of years ago. This article made a deep impression on me and I have never forgotten the unchanging principle which it drove home. "Nature beckons with a finger dipped in gold" was the title—Old Mother Nature you know is really a top flight salesman

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. . . help sell

PITCO Frialators

REG. U.S. PAT. OFFICE

THE NEW PITCO FRIALATOR

MODEL 14 X 14

Recommended for small restaurants and roadside stands . . . one of the nine models of Pitco Frialators to fit every frying need. Available in black enamel or all-stainless steel.

During the past thirty years gas has contributed extensively toward making Pitco Frialators the leading deep-fat frying equipment in the world and in establishing Pitco as the "Greatest Name in Deep-Fat Frying Equipment".

Pitco engineers realize that gas alone offers the flexibility so essential in a heating medium for frying equipment. The quick recovery offered through gas assures less fluctuation in thermostatically controlled heats . . . minimum fuel consumption.

The unique construction features of the Frialator guarantee uniformly delicious, golden brown fried foods. Its improved design has won countless friends for Frialators.

There are over 80,000 Frialators in use all over the world. Wherever you find fine fried foods, you'll find a Pitco Frialator!

P. P. F. F. PITCO POPULARIZED FRIED FOODS

Remember . . . there is only one FRIALATOR . . . the PITCO FRIALATOR

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Sole Manufacturers of Pitco Frialators

711 BROAD STREET LYNN, MASSACHUSETTS

in anybody's league. Do you remember that Columbus was searching for a new and shorter route to the riches of India when he discovered America? He wasn't looking for this big powerful North America of ours but nature led him on because here she had work for men to do. California was known but to a handful of hardy souls until the Gold Rush in '49 came along. The only gold we hear about in California today is the permanently waved tresses adorning curvacious movie blondes. Nature called men and women to California to take advantage of its wonderful climate and its fertile valleys—called with a finger dipped in gold. What do they talk about in Alaska today? Not the Yukon gold of the Sourdough, but how quickly crops can be raised in the short far northern summer.

That's how the super salesman Mother Nature accomplishes her creative salesmanship. Bees are attracted to flowers by lovely colors and odors, thereby carrying on pollenization and so it goes. An automatic gas range built to "CP" specifications is the gold tipped finger with which we are going to beckon to our customers.

The "CP" program progressed slowly at first—not by a jugful was every range sold built to "CP" standards—but progress was made. Men like Bob Agee, John Bogan and now Jim Gorton of GAMA and Frank Williams of A.G.A. kept telling the story of "CP" from one end of the country to the other. The average quality of gas ranges kept climbing until gas companies and dealers alike were selling ranges at $25 to $50 more per range than ever before.

Automatic Performance

Today in a territory served by members of our association there are literally thousands of homes without cooks, maids or butlers. Women who never did cook before are having it to do now and they are doing a good job, too. These women are looking for ways and means to spread themselves over more work. There's shopping to be done. Most of them want to still find time to dig around in the flower garden a few minutes every day. What an appeal Automatic Performance is going to have for these families. Automatic is a word with real pulling power for them. How many women have you heard say that they want just a washing machine? No, the word today is a Bendix or a Laundry Mat or some form of automatic laundry machine. The finger dipped in gold to beckon to hardworking housewives today is the word automatic —automatic gas ranges built to "CP" specifications.

Thousands of outmoded gas ranges in our territory today are sitting ducks for the automatic cooking story our competition is now telling. Have you examined the pages of women's magazines lately? Ad after ad says cook automatically with a cold-top or some other kind of electric range. After they have paid a hundred dollars just to get the thing installed it's going to take a long time to get it out again, even when they find out the drawbacks to cooking electrically.

Automatic Performance is the heart of "CP" just as the "CP" model is the heart of the New Freedom Gas Kitchen. Let's beckon to our prospects with a finger dipped in "automaticity." Even if a good many of them don't buy "CP" models they will still be sold a good quality of gas range. Again there will be those who say, "Let's not sell automatic ranges, they will give us a lot of service headaches." I say to you that if we don't sell them we won't have any service calls at all. People don't call us to service our competitor's ranges. There may come a time when we will wish we had more service calls to make on good gas cooking customers.

CP a Standard

Let's refresh our memory a bit on this business of "CP." You know there really isn't any such thing as a "'CP' range." There is a manufacturer's brand name gas range built to "CP" standards. We should always sell a brand name range first, and "CP" second. "CP" must not be allowed to supersede the brand name. The leading manufacturers of gas ranges are doing an outstanding job in staying up at the front line of this competitive battle with us—feeding us the latest and best type of ammunition so that we can hold on to our position in the cooking field. Approximately half of the 1,800,000 gas ranges sold in 1946 were produced by the "CP" manufacturers group. In January of this year 183,000 gas ranges were produced. This equals an annual production rate of 2,300,000 and more "CP" models proportionately than last year. We should reciprocate at every opportunity by pushing their brand names along with our "CP" promotions.

Gas range manufacturers have been beset with the same kind of production difficulties as other manufacturers. It seems to me, however, that the better quality ranges have fewer of the small annoying slips that get by inspectors in various plants. There has been a definite shortage of pilots, valves and other parts to make up "CP" models. Consequently none of us has been able up to now to get as large a proportion of "CP" models as we would like. There has been though, a steady enough supply of ranges built to "CP" standards to warrant a good strong start in their promotion. Gas range manufacturers have been doing a swell job and we should in turn pull the car on our side in making their efforts effective at the local level and the point of sale.

"CP" standards have changed some since the war ended. They have been revised to give manufacturers some breathing room so that they can be free to design and build the very best performing cooking machine possible. Emphasis is on performance as never before—Automatic Performance—"CP" standards have not been lowered but they have been broadened. Something new has been added. Requirements have been reviewed by manufacturers, utilities, home economists and other cooking experts to make sure that our customers are provided with the last word in performance and convenience. Now there are 17 points as against the old 22 points. I recommend that if you haven't already done so, obtain a set of the new standards which have been printed in a most understandable fashion in a 4-page leaflet of standard size.

Become Aggressively Active

Up to now I have been trying to point out the necessity for doing something immediately to become aggressively active in the business of promoting gas cooking. Now, I ask that you bear with me a little longer in what I hope will prove to be a brief discussion of what is being done and what to do. I will try not to leave you in the position of a buyer in a large department store, I heard about not long ago. The sporting goods buyer in a New York store operated by two brothers had a display of golf balls. The balls were priced at 69c each. Brother Sam came by one morning on one of his frequent inspection trips, saw the display and asked the buyer what price Macy's had on the same kind of balls. The buyer said "54c." Sam immediately said, "Mark ours down to 54c." Sam had hardly gotten out of sight when Brother Joe

came by. Joe said to the buyer, "How much profit have we got in these golf balls marked at 54c?" "Nine cents," was the reply. "Mark them up to 75c," snapped Joe. Naturally the buyer was somewhat disturbed so he went in to see the merchandise manager and explained the situation. He was even more confused when the merchandise manager replied, "You have your orders. Carry them out." I am certainly not going to give you any orders, just a few suggestions about what is available in the way of tools.

At the national level the biggest thing in the promotional life of gas companies today is the New Freedom Gas Kitchen. It has spread the news far and near that Gas Kitchens are modern, that Gas Kitchens are efficient, that Gas Kitchens are comfortable. The latest approach is the certification program. Find out more about it. Both builders and customers have a real interest in this certification plan and it's up to us at the local level to point this out to them. By spending just a few more dollars we can get a greatly enlarged benefit from the national promotion of Automatic Gas Ranges built to "CP" standards and all the glamour of New Freedom Gas Kitchens.

The "CP" cookbook has been "souped up" to meet present day demands and is now called "Automatic Gas Cooking." This is a convenient piece for the housewife and can be widely used as our answer to the many calls we get for recipes. They carry the full story of "CP."

The A.G.A. advertising campaign will hit the whole country with 216,000,000 selling messages in national magazines in 1947. This copy features automatic clock control and will use actual gas ranges. To my mind this is a big step forward over the old anonymously drawn ranges which have appeared in previous copy.

A.G.A. is now in the process of preparing a 25-minute full color talking motion picture for use in schools and before audiences. Its purpose is to sell the many advantages of gas cooking to domestic science students, the future homemakers of America. In all your promotion don't dare overlook the "teen-agers." They will definitely determine the future success or failure of our business.

Then there is a teachers' manual on the care and use of the gas range. This teachers' guide should be ready in the not too distant future and will fill a long felt need. Plans are being worked out now for a resumption of the activities of the "CP" Ranger Club. You remember the diamond studded lapel pins and cash prizes for outstanding range salesmen. A promotion as important to our continued well being as this "CP" program must pull in every one who touches the program at any point. Certainly next to the customer himself in importance is the salesman. The "CP" Ranger Club is a most effective method of interesting the salesmen. Watch for announcements about the operation of the Club. Its valuable assistance will be ready for you just as soon as the supply of "CP's" reaches the point where salesmen won't have to fight each other for ranges to sell.

The Gas Appliance Manufacturers Association is carrying on a trade paper campaign which covers every important publication that goes to the more than 60,000 gas range dealers throughout the country. The present copy is designed to change the thinking from mere "'CP' gas ranges" to "Automatic gas ranges built to 'CP' standards." It is also designed to impress dealers with the greatly expanded market for gas ranges.

The Huge Market

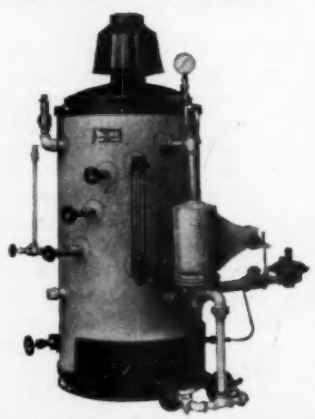
Today there are 23,749,000 homes in the U. S. and Canada using gas for cooking. Conservatively 12,500,000 of these are obsolete. Many are completely worn out and at least these twelve and a half million need replacing. Are we going to replace them or is someone else? Any gas company which has not made some sort of start toward building up this replacement market has already lost a certain percentage of its customers, and the longer we wait the greater the loss. Several million new homes will be built this year. This also is our problem. How many of these will cook with gas?

A class in school had been studying famous old Greek personages and was asked to write a short essay on Socrates. One small boy wrote as follows: "Socrates was a great man. He was a Greek. He went around telling people what to do. They poisoned him." It's a good thing for a lot of us that people today as a rule do not act as impulsively as they did in the days of ancient Greece. Even at that I'm not going to risk Socrates' fate by trying to tell you what to do. I do ask, however, that you give full support to all of our national promotional activities. Money, yes, that's got to be, but also take a real interest in these activities, send in your constructive criticisms to all the A.G.A. Committees. Share your ideas about range promotion with us of the A.G.A. Domestic Range Committee. I believe that our industry is doing a fine outstanding job at the national level. Only folks like you and me can tell how good a job we are doing locally. Let's check up on ourselves. When I get back home I'm going to go over our whole promotional program. Things which I have heard here have convinced me that it needs revision in several places. It most certainly needs expansion.

I honestly believe that the entire gas industry holds the best competitive position in its entire history. Our public relations are good. Gas appliances have outstanding glamour and appeal. Our executives are right on the beam at every level. What happens from now on is up to each individual company.

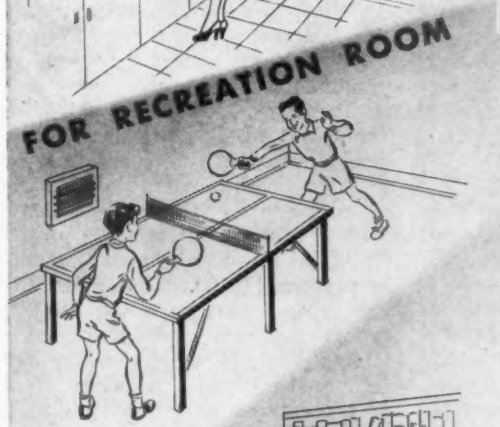
In a very short time we will have a full flow of appliances. Competition will be keener than we have ever known before. That's good—that's healthy. The "CP" Program is made to measure for intense, constructive, competitive effort. Use this program to the limit. Automatic is the new keyword for all our effective gas cooking promotion. Sell "Automatic Performance with Gas" to all your prospects. Let's beckon our prospects to the joys and satisfaction of gas cooking with a big energetic finger dipped deeply in the gold of "Automatic Performance."

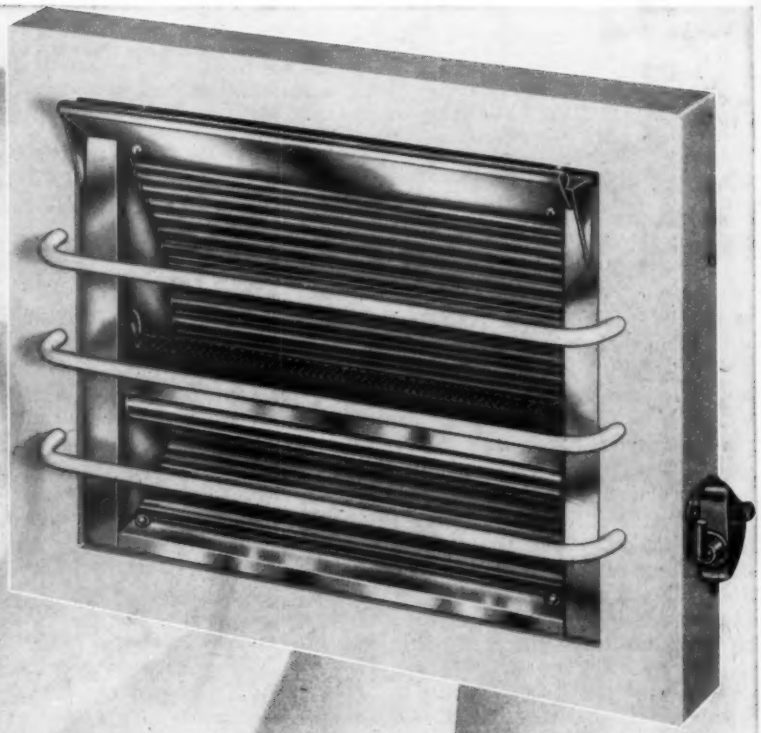
LATTNER GAS BOILERS
1 H.P. to 45 H.P.



2 H.P. Gas Fired Pressing machine boiler. 100 lbs. ASME Code.

P. M. LATTNER MFG. CO.
CEDAR RAPIDS, IOWA





HUMPHREY Rafire WALL HEATER

New comfort for your customers is assured with the Humphrey Rafire Wall Heater. This smartly styled, efficient heater is ready on a minute's notice to supply a generous amount of pure, radiant heat. Wherever EXTRA heat is needed — for bathroom, living room, recreation room, kitchen or den — the Rafire Wall Heater is ideal for meeting this demand.

A specially designed efficient burner quickly heats the Chromel heating element to a beautiful incandescence, and a sparkling Chrome reflector radiates the heat directly into the room. The Rafire Wall Heater is of all metal construction, quality built throughout. Operates equally well upon Natural, Manufactured, and Liquefied Petroleum gases.

GENERAL GAS LIGHT COMPANY

KALAMAZOO, MICHIGAN

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A HUMPHREY PRODUCT

Safety in the Gas Industry

By
Howard T. Jayne
Safety Inspector
The Philadelphia Gas Works Company

THROUGH the American Gas Association, we know that the Safety record of our industry generally has not been conveniently side-stepped because there was no further goal to achieve. Those of you who are invested with authority to establish policies in the companies you represent, know, and doubtless well know, what safety means to your organization.

In the time allotted, it will be impossible to do little more than scratch the surface of "Safety in the Gas Industry," since there are dozens of factors, each of which might well consume hours on the platform.

Looking back over the years of experience, it may be well to consider first the previous high-production era, when labor and industry were in high gear working for a common goal. In that era, 1926 to 1929, Compensation Laws were in process of formation in many states and were undergoing revisions in others. These conditions pointed industry toward increased activity in Accident Prevention. Safety programs were set up, operating rules were strengthened and revisions were made in training and work practices for the advancement of safety on the job. This accident prevention trend soon began to show its effects, and by 1930 had reduced the employee accident frequency in gas utilities by approximately 25%.

About this time, the effects of the recession set in. Labor became plentiful, materials were on the market in volume, and at prices that eliminated makeshift processes or temporary repairs to equipment. As the period progressed, work volume dropped off and labor reached a point where men adhered more to operating rules and instructions.

In 1938, due to the world upset, industrial conditions again began to change, accompanied by an increase in the volume of work. This put more work and longer hours on personnel, with an accompanying increase in accident hazards. Supervisory activities changed and less time was spent on job training.

During the long recession period labor organizations were given strong support by government agencies, which may have had an indirect effect on accident frequency, for it gave the worker a new sense of job security. This new sense of job security was accompanied by a feeling of irresponsibility. The changing trend brought a lessened regard for loyalty that had its effect upon work practices. The changes affected accident trends and the frequency gradually mounted until 1941, when we were only about 25% under the 1930 rate.

With the advent of lend-lease, industrial activities increased; labor became scarce; labor rates increased. Gas utilities awakened to the fact that they had to find new processes, were forced to cut corners, and compelled to streamline their operations in order to compete in the labor market.

Soon war called our younger men to the colors and experienced men were attracted to war production jobs at exceedingly high rates of pay.

This forced utilities to cut corners even further. Capable labor became scarce. Supervisors were called upon to participate in operating activities, leaving less time for supervisory responsibilities and training procedures. Thus new and inferior workers had to learn about their jobs by a hit or miss fashion.

As the war period progressed the scarcity of materials became acute; frequently operations had to be continued with equipment, as we say, "held together by a shoe string." During this period it was the policy of many companies to curtail activities not absolutely essential to operations, while their work force dwindled to a minimum. With gas send-out increasing, it meant that operating forces had to spend longer hours on the job, often to a point of fatigue. It meant also that the early practice of job planning was falling by the wayside because expediency dictated that many jobs had to be filled by men without the usual training. High wages in war industries also had their effect on personnel, causing further mental upset or let down in the desire to do a good job. All of these factors contributed to a steady increase in accident frequency which was then rapidly receding to the 1930 level.

More recently extensions for new home construction; replacement of mains due to increased area loads; renewals for betterment; deferred plant betterments; new plant construction; and continued high sales have caused a sharp increase in personnel—as much as 30% in some situations. This rapid increase in activity within a short period meant a greater load on the supervisory force than it had experienced in many years, and a lack of trained supervisory replacements meant that the existing force had to continue in the handling of routine operations, plus new activities.

Today older as well as newer employees are having more and more accidents, and as yet it has been found not feasible to release supervisory personnel from operating jobs to carry on the long training period necessary to prepare replacements in certain vital operations.

Due to the current sharp increase in personnel it has been noted that the greater part of some working groups are new and inexperienced men. Years ago, new men may have composed 20% of a working group; at present, many groups might include 80% new men. Of necessity these groups have had to work under an inferior grade of supervision; men who may have long years of job experience, but lack the leadership qualities or time to exert safety supervision. Therefore, workers often disregard instructions and try to carry on in their own way in an effort to get on with the job.

These conditions have thrown the accident rate to a higher frequency than that experienced during the last 15 years. In 1945, accident frequency in manufactured and mixed gas operations had risen to 19.5 accidents per million man hours worked. This rise continued in 1946 with a frequency rate of 22.5, as compared to the low of 10.9 in 1938 and the rough estiate for 1947, as furnished by the National Safety Council, shows a continued increase of from 20 to 30%.

It is about time we flash the old familiar Stop-Look-Listen sign along a path of danger. We should *stop* our reverse progress along the present path. We should *look* around for accident causes. We should *listen* to the suggestions and advice of others. With the flashing of the familiar

sign, here are a few basic suggestions:

1. *Better selection of the Man for the Job*: The current market should improve in quality as the period of governmental gratuities expires and labor begins to realize that steady employment allows for better living. In some localities, however, this is still a difficult task because of the class of labor available.

2. *Complete employee Job Training*: This suggestion not only should include the Who, What, Where, When and How of the job, but also should stress Safety and First Aid.

3. *Job Analysis:* An essential factor for the supervisor to enable him to become more familiar with the peculiar parts of the job, thus better equipping himself to guide others in safe and efficient operation.

4. *Job Observation*: A job observation policy applying to work activities to check the worker in his daily tasks. This should quickly locate job faults and unorthodox work practices.

5. *Accident Clinics*: Clinics to be scheduled for periodic intervals, to include supervisory forces from and above the grade of group leaders. Here accidents can be discussed in detail and corrective methods suggested.

6. *Improvements in Practices*: We should encourage the worker as well as the supervisor to look for and suggest improvements. At times, interest is increased by incentives in the forms of a cash or other awards.

7. *Creative Use of Statistics*: Underlying accident causes and suggested corrective measures can be found in readable and intelligible accident statistics. They should be used in proving points in question.

8. *Managerial Responsibility*: Today, it is a known fact that top management is vitally interested in employee safety. To keep workers and supervisory forces aware of this fact, however, management should, from time to time, issue statements calling attention to reported accident facts and statistics. Many well organized companies are following this practice.

Regardless of the suggested program or what course is followed, statistics covering years of accident experience prove that the supervisor must be a salesman. His field lies among his associates; his "commodity" is safety; his competitor is indifference and carelessness. To do the job right he must know his men well; he must think Safety; he must talk Safety; he must show them safe ways; and he must sell them Safety. Above all, he must sell himself.

"No Accident" Safety Record

Employees of The Manufacturers Light and Heat Company closed their annual August "No Accident" safety campaign with a perfect safety record. There was not a single injury during the month to cause time lost from work.

Irving K. Peck, vice president and general manager, reported that this accomplishment was duplicated in all the affiliated gas companies making up the Pittsburgh Group of the Columbia Gas System.

According to Mr. Peck, more than 2500 gas company men and women worked safely for approximately 500,000 hours during the annual August drive for improved safety practices.

Lincoln Foundation Appoints New Assistant Secretary

Dr. E. E. Dreese, Chairman of the Board of Trustees of The James F. Lincoln Arc Welding Foundation, Cleveland 1, Ohio, announces the appointment of Mr. Charles G. Herbruck as Assistant Secretary of the Foundation.

For the past five years Mr. Herbruck has been employed in plant supervision in the welding industry; planning and developing welded designs and the science of welding. He comes to the Foundation with first hand experience in using the technical advances in welding to reduce production costs and to increase flexibility in production of machinery to raise the standard of living.

Visit the Oster Plant during the A. G. A. Convention

Cleveland, Ohio, Oct 6, 7, 8

A cordial invitation is extended to you to visit our plant when you are in Cleveland during the Convention. It will be a pleasure to show you Oster Pipe and Bolt Threading Machines in process of manufacture. Of particular interest should be the various types of Oster Threading Equipment widely used in the Gas Industry. Our factory at 2057 East 61st Street is within easy reach from A. G. A. convention headquarters at Hotel Cleveland. We will consider it a privilege to arrange transportation for you from your hotel to our plant. All you need to do is to telephone HEnderson 6011 and ask for Mr. C. R. Metcalf.

THE OSTER MANUFACTURING COMPANY
2057 East 61st Street • Cleveland, Ohio

OSTER

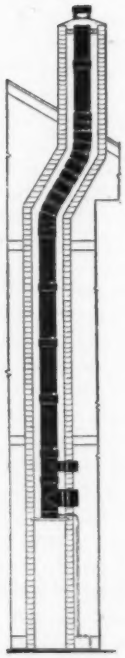
Power Pipe Threading Machines

VITROLINER
-the Superior Vent Pipe
Trade Mark Registered

for Highest Quality

CHIMNEY LINING

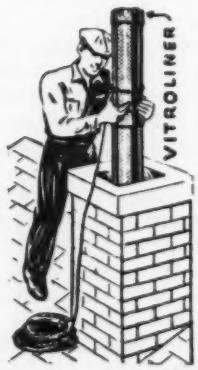
IDEAL FOR OIL OR GAS-FIRED HEATING PLANTS



Vitroliner—the pioneer in the field of lining chimneys, with 20 years of engineering development and research has a proven record of successfully safeguarding and protecting masonry chimneys from the products of combustion including condensation (a common condition in all chimneys).

Vitroliner is dependable and economical—helps eliminate fire hazards and adds many years of life to the chimney. Made of heavy gauge steel, double coated inside and out with acid resisting Vitreous ENAMEL fused into the steel at 1575°F. The coating of enamel is common and much the same as with stoves, refrigerators and bath tubs, and the use of enamel dates back to early Chinese civilization.

The porcelain surface of the chimney liner is smooth, even, and is quickly heated and cooled. The top of the chimney is sealed, creating a dead air space between the liner and the masonry. In a few minutes the temperature is up to efficient operating temperature, thus providing an excellent draft and complete combustion in the heating plant. In this manner combustion gases usually pass harmlessly from the chimney before reaching the dew point. When the heating plant is off, the liner cools quickly, thus eliminating heat loss caused by excess draft.



The installation of Vitroliner in old or new chimneys is simple and is accomplished by lowering from the roof line as illustrated at right, and even in offset chimneys can be completely installed easily and quickly in a few hours.

Write for further information and literature

CONDENSATION ENGINEERING CORPORATION

122 S. MICHIGAN AVE. **CHICAGO 3, ILLINOIS**

First New Freedom Gas Kitchen in Detroit

By
M. W. Bowman

THE SALES department of the Michigan Consolidated Gas Company, headed by Mr. Newell Loomis, recently installed the nation's first certified New Freedom Gas Kitchen in the new home of Mr. and Mrs. Harry Gutov, Detroit, Michigan. Mr. Wilbert H. Glines of the retail selling division of Michigan Consolidated, presented the Gutovs with a certificate to mark the occasion.

To secure certification by the American Gas Association as a New Freedom Gas Kitchen, planning must be scientifically correct for convenience and efficiency. The gas range must be completely automatic; the Servel refrigerator must be ample in capacity for the needs of the family and the planning must include ample hot water, supplied by an automatic gas heater.

The equipment installed in the Gutov kitchen includes a Roper 6-burner gas range, fully automatic including automatic lighting for broiler and oven and instamatic oven operation permitting its turning on and shutting off at pre-determined times.

The gas range in the Gutov kitchen sits up against an outer wall, a convenient feature since the gas range has a ventilation hood catching and expelling to the outside all cooking vapors and odors.

Other equipment installed is an 8 cubic foot Servel refrigerator and an "Everhot" automatic hot water heater "fully automatic . . . fast recovery." Additionally a Calcinator incinerator was installed in the basement. With the exception of the hot water heater all installation was done by the company.

The Gutov kitchen has a black marbleized linoleum floor, white cupboards and ceiling and Chinese Red counters and accents. The work area of the colorful kitchen is laid out in a U shape with the refrigerator and range at the sides of the U and the sink is placed under a window which looks out over the back yard. Work spaces are ample and well spaced. A cleverly placed snack bar keeps the grade door and its traffic separated from the kitchen areas. A built-in breakfast and luncheon nook is an integral part of the plan.

The Michigan Consolidated did not canvass the Gutovs. They were approached by Mrs. Gutov who brought in with her the plans for the house. The company had ample time to prepare the finest layout possible.

It was not difficult to sell Mr. and Mrs. Gutov since Mrs. Gutov's mind was fully made up that the New Freedom Gas Kitchen was the only possible kitchen for her.

"I saw so much advertising in the newspapers and magazines concerning the New Freedom Gas Kitchen and it appealed to me so much that there was really no other type of kitchen that I could consider," she said.

The Gutovs gave the Michigan Consolidated Gas Company a free hand, insisting only that they wanted to get the best of everything.

Michigan Consolidated believes that when equipment becomes more readily available they will have no difficulty installing more New Freedom Gas Kitchens. It is their plan to contact the more active Detroit home builders with the view in end of getting them to include New Freedom kitchens in their building plans.

While the Gutov installation was made only recently the Michigan Consolidated state that they have already received a call from another interested builder of homes.

To promote the sale of the kitchens Michigan Consolidated is setting up a two-man sales team to contact active builders. As more kitchen equipment becomes available additional salesmen may be assigned to this particular work.

Michigan Consolidated plans to point out to potential new home owners that under title *6* of the FHA, payments for the installation of the New Freedom kitchen can be included in the costs of the home itself and be amortized over the 25 year payment period. This provision of the FHA will be used as a strong selling point by the company.

New Modern Natural Gas System at Atmore, Ala.

It was announced by the city officials that a new modern natural gas system was put in operation August 18, 1947 by the city of Atmore, Alabama.

The system consists of approximately twenty miles of six inch transmission line and about twenty miles of distribution line. The system is owned by the city of Atmore who will buy the natural gas from the United Gas Pipe Line Company. The city invested a total of $325,000 in their new system, financed by an issue of revenue bonds.

The system was designed and constructed by the organization of Ray R. Littrell, Contractor, of Opelousas, Louisiana. The same organization is building similar plants for the cities of Flomaton and Brewton, Alabama.

CLEVELAND

"A" TYPE METERS
"B" TYPE METERS
DIAPHRAGMS

Cleveland Gas Meter Co.
ESTABLISHED 1875
2009 Rockwell Ave., Cleveland 14, O. Phone CHerry 2351

Governor's

for all kinds of Gas Pressure Control
HOLDER • DISTRICT • SERVICE
APPLIANCE

Mulcare Engineering Co., Inc.
Gas Works & Distribution Equipment
53 Park Place New York 7, N. Y.

Yes, there's never any guesswork in gas-work! And the new Universal Gas Range incorporates the features that women demanded, eliminating all guesswork in your sales-work! Women all over the country asked for these features and Universal Ranges offer them:

- ✓ Fully Automatic Controls
- ✓ More Modern Conveniences
- ✓ Easier to Keep Clean
- ✓ Greater Ease of Cooking
- ✓ Cook Food Better
- ✓ Cook Food Quicker
- ✓ Cooler in Operation
- ✓ More Economical to Operate
- ✓ Costs Less to Buy

1947
Still the UNIVERSAL Selection of Cooking Perfection

GAS
The Preferred Cooking Fuel

Fully Automatic
UNIVERSAL
The Preferred Gas Range

So, when you feature Universal Gas Ranges, you've got it too! And Cribben & Sexton Company is telling millions of buyers in the country's leading national magazines about it! Telling it in big space, in colorful advertising!

CRIBBEN & SEXTON CO.
UNIVERSAL Gas RANGE
700 N. SACRAMENTO BLVD. CHICAGO 12, ILLINOIS

"Gas Has Got It"

ELEVEN regional meetings throughout the country were held in September to broaden the impact of the "Gas Has Got It" drive to supply full information to help gas companies start local campaigns in support of the national effort.

A typical meeting was held at Portland, Ore., where gas utility men and manufacturers' representatives from Oregon, Washington, British Columbia and California filled Portland Gas & Coke Company's "Hospitality House" September 2 to hear details of the first industry-wide "Gas Has Got It" campaign.

R. G. Barnett, vice-president and general manager of the Portland utility and a director of the American Gas Association, presided over the meeting which was sponsored jointly by the American and Pacific Coast Gas associations. John H. White, Jr., director of promotion, represented the A.G.A.; and J. E. Kern of Los Angeles, assistant manager, represented the P.C.G.A.

The morning session opened at 9 A.M. with a welcome by Barnett and an introduction to "Gas Has Got It" by Kern. N. O. Fratt, vice-president in charge of sales for the Seattle Gas Company, then reviewed the Elmo Roper survey on which the campaign is based.

Further details of the campaign were presented by three speakers—White, who outlined the general promotion; and Fred M. Kimball and C. W. Steele of the Portland utility, who covered the advertising and publicity phases, respectively.

The afternoon session opened with W. A. Bitcon of British Columbia Electric Railway Company, Vancouver, playing a transcription of the Mary Margaret McBride radio program on which the A.G.A. secured an option for local sponsorship by the gas industry.

Alvin R. Bravender, Pacific Northwest representative for the Tappan Stove Company, was next on the program, making a presentation of "Gas Has Got It" campaign material made available by cooperating gas range manufacturers.

E. J. Ludeman, commercial manager for Washington Gas & Electric Company, Tacoma, then introduced the new A.G.A. sound color film, "Winning Seals of Approval," which was well received. For most of the large audience it was the first showing.

An impromptu speaker at the meeting was President Paul B. McKee of the Portland utility, who lauded the industry for launching a powerful campaign like "Gas Has Got It" at a time when salesmanship again is coming into its own to replace the era of order taking.

Speakers at the "Gas Has Got It" kick-off meeting September 2 in Portland—which tied with Minneapolis for "first" on the list of ten September regional meetings—included, from left: John H. White, Jr., American Gas Association; J. E. Kern, Pacific Coast Gas Association; C. W. Steele, Portland Gas & Coke; N. O. Fratt, Seattle Gas; and W. A. Bitcon, British Columbia Electric Railway Co., Ltd., Vancouver.

Point of View of the Manufacturers

AT THE meeting in Boston, Mass., Sept. 11th, Malcolm Leach, President, Glenwood Range Co., presented the point of view of the range manufacturers. Mr. Leach said in part.

"We have all waited a long time for this day. Now we have got something real to sell and a plan to put it over. As you all know, this is one of a series of regional meetings that are being held from coast to coast introducing the "Gas Has Got It" Automatic Gas Range Campaign. It is a joint affair tying in the utilities, dealers and appliance manufacturers, a campaign to tell the housewives what we have done to give her the convenience, comforts, and economies she has been waiting for in cooking appliances.

"We have had a long holiday from selling, one that I am sure none of us have enjoyed. But let's see where we stand today in the gas industry. There are 23 million homes in America cooking with gas and, despite war-time restrictions, the number of homes using gas for cooking has increased 46% in the last ten years. In that period there was an increase of 7,200,000 new gas cooking customers between the gas utilities lines and the 'LP' gas dealers.

"What about the electrical industry with all their big promotion of electric-cooking? A total of 2,800,000 electric ranges have been installed in the same ten-year period, bringing that total usage to about 4,000,000 customers. Did you ever realize what the 'LP' gas dealers have been doing to the electric competition in the rural areas; which is after all where the electric industry looks for its greatest sales potential. During this ten-year period the 'LP' gas industry has increased its users by 600% so that today in the rural districts it stands, even with the electric industry in total number of customers.

"Our Manufacturers' Association estimates that there are now 10,000,000 gas ranges over ten years old. There are also another eight million ranges which will fall into the same category in the next five years. It

is possible that by 1950 the potential demand in United States and Canada may exceed 25,000,000 ranges; that is provided we do the right kind of sales job with the American public. It is a tremendous job but I think you will agree that with the tools you see here today we are prepared to tackle it in a big way.

"We gas range manufacturers now stand with a production capacity of 4½ million ranges a year, enough to take care of the entire demand for high-grade automatic gas ranges.

"There are three subjects I would like to call to your attention which I know members in the 'CP' manufacturers group would like to have me mention.

1. Bring you up to date on the 'CP' program.
2. To tell you whether the manufacturers can properly supply you with at least one floor sample of an automatic gas range for every appliance dealer and utility showroom.
3. What the range manufacturers are doing to tie in with this 'Gas Has Got It' program.

"To take up the first question. Many of you are familiar with the fact that about ten years ago a group of forward-looking utility executives and gas appliance manufacturers met to create a program to raise the standard of gas cooking appliances and to provide the housewife with a buying guide that would properly interpret gas as finest for cooking. Out of these series of meetings came arrangements for a 'CP' program, from which developed the 'CP' trade mark of GAMA, which I believe is today the only consumer buying guide in the major appliance field. Through the first years of our program we struggled with many members of our industry who saw it as only another range with an automatic lighter but, in spite of these handicaps, during the period 1938 through 1941, the 'CP' program helped to raise the average selling price of gas ranges $25.00, which proved women were willing to pay more if they could get comfort and convenience in the better type of cooking appliance. This increase in price benefited the appliance salesmen, increased the profit to the dealer and the manufacturer. It gave the utility companies a better range on their lines which greatly reduced service expense, to say nothing of better interpreting the value of gas in outstanding appliances. It was a step which I think we can all feel proud of. The war interrupted it just at a time when we were making unusually fast headway and, as you know, production was stopped on all ranges built to 'CP' standards but due to the farsightedness of the AGA and GAMA publicity was not allowed to lapse completely and continued in newspaper advertising, magazines, and trade papers. Publicity was put out even at a time when none of us knew when a range built to "CP" standards could be built again. Now we stand ready to pick up the fruits of the work which we have done and carry the program on so that our early efforts will look insignificant compared with the job we can do in the period ahead. The public today is looking for and expecting automatic gas ranges as consumer surveys have shown.

H. H. Cuthrell, V.P. Brooklyn Union Gas Co. expresses the Gas Company point of view.

"Ranges with full automatic clock control that turn the cooking on and off are now ready to take their rightful place in the industry promotion.

"Our 'CP' specifications have been improved during the war and a great deal of time and effort have been expended in studying them. New specifications went into effect last January which have removed many of the technical requirements and now allow the manufacturer much broader expansion of his own ideas in building the finest cooking appliance that can be produced.

"One reason why we range manufacturers are so enthusiastic about this 'CP' promotion and 'Gas Has Got It' program is that today's publicity clarifies the meaning of the symbol 'CP.' It will no longer confuse the public that 'CP' is a special brand name of a manufacturer. It simply tells the story that it is an automatic gas range built to 'CP' standards. In this way it ties the Gas Association's advertising directly to the individual manufacturers promotion. This different approach has encouraged the manufacturer to spend much more freely of his money to tie his brand name in with the Association advertising. I think our position is very unique in the business field in this country. You

James I. Gorton, GAMA, points out the Manufacturers' point of view.

have twenty leading gas range manufacturers banded together with the public utilities companies all working for a common cause—to give the American housewife an honest guide for her choice of the finest cooking appliance.

"I spoke of the manufacturer's interest in the 'Gas Has Got It' program. I only wish I had the time to show all of the material that my company and other manufacturers have prepared for the assistance of you and your dealers. We can truthfully say you will be swamped with national and local advertising, booklets, mailing pieces, pamphlets, movie and slide films which will be coming to you from all 'CP' manufacturers. The manufacturers as a group will spend 1½ million dollars in national and regional advertising during the last half of this year. This advertising will be beamed to tell your customer about the 'Gas Has Got It' program. In addition to this money, another 1½ million will be spent on displays, booklets and other advertising. It is our estimate that the total of this advertising and promotional money spent by the twenty individual 'CP' manufacturers will exceed $4,000,000, and don't think that we are putting everything into this fall campaign. When you see the program that we will have for you in 1948, you will agree that this isn't just a shot in the arm; it's a complete long range promotion.

"It certainly seems that the material is here and if we remember that sales are made in direct proportion with the number of door bells we push and do not leave this entirely up to the appliance dealers and hire the type of retail sales people to do a good job, we are going to get off to the finest start of a long range promotional campaign the gas range industry has ever seen."

Boston Consolidated Company Celebrates 125th Anniversary of Gas Service

Fitting celebration of its 125th anniversary was observed in September by Boston Consolidated Gas Company, with extensive decoration of its main office and branch stores and appearances in various advertising media.

Store windows highlighted the event with "Then and Now" displays in light cartoon vein, accentuating the inconveniences of the past in contrast to modern gas appliances.

The company's customer house organ, *Boston Gas News,* appearing in double-size and color, gave a cross-section picture of Boston Consolidated today, leading into a presentation of post-war appliances accompanied by the A.G.A. symbol, *Miss Flame.* The anniversary was also signalized on the company's daily radio show, *Quizzing The Wives;* on truck posters; in the employee publication, *Boston Gas Lines;* and on billboards. An anniversary dance was held in the company auditorium on September 5.

The anniversary commemorates the first laying of gas mains in Boston streets, in September, 1822.

One of the window Displays at Boston Consolidated Gas Company Building, 100 Arlington Street

Gas-Burning Appliance Requirements of A.S.A.

An entire new listing of its 874 standards is now available free of charge at the American Standards Association and may be obtained from their office, 70 East 45th Street, New York 17, N. Y., P. G. Agnew, vice president of the American Standards Association has announced.

A number of additional revised standards approved since the January 1947 issue of all American Standards are included.

These standards are used throughout industry and by municipal, state, and federal governments. Manufacturers use them to facilitate production operations or lower production costs, or to eliminate controversies between buyer and seller, or to raise the level of their industry by eliminating misrepresentation;—consumer groups, as a yardstick to measure the merit of the things they buy—government agencies, in their capacity as buyers or as protectors of the public interest.

Z21	Gas-Burning Appliances, Approval and Installation Requirements:	Price
Z21.1-1945	Domestic Gas Ranges, Approval Requirements for (1942 edition with 1945 addenda) (1945 addenda sold separately 15¢)	1.15
Z21.2-1938 R1947	Flexible Gas Tubing, Listing Requirements for	.40
Z21.3-1940	Hotel and Restaurant Ranges and Unit Broilers, Approval Requirements for, with Addenda Z21.3a-1946 (Addenda Z21.3a-1946 sold separately 40¢)	1.40
Z21.4-1932 R1947	Private Garage Heaters, Approval Requirements for	.40
Z21.5-1940 R1947	Clothes Dryers, Approval Requirements for	1.00
Z21.6-1932 R1947	Incinerators, Approval Requirements for	.40
Z21.7-1932 R1947	Gas Heated Ironers, Approval Requirements for	.40
Z21.8-1940	Installation of Conversion Burners in House Heating and Water Heating Appliances, Requirements for	.50
Z21.9-1940 R1947	Hot Plates and Laundry Stoves, Approval Requirements for	.50
Z21.10-1945	Gas Water Heaters, Approval Requirements for (1944 edition with 1945 addenda) (1945 addenda sold separately 15¢)	1.15
Z21.11-1945	Gas Space Heaters, Approval Requirements for (1942 edition with 1945 addenda) (1945 addenda sold separately 15¢)	1.15
Z21.12-1937 R1947	Draft Hoods, Listing Requirements for	.50
Z21.13-1945	Central Heating Gas Appliances, Approval Requirements for	1.00
Z21.14-1934 R1947	Industrial Gas Boilers, Approval Requirements for	.40
Z21.15-1944	Gas Valves, Listing Requirements for	.50
Z21.16-1940 R1947	Gas Unit Heaters, Approval Requirements for	1.00
Z21.17-1940	Gas Conversion Burners, Listing Requirements for	.50
Z21.18-1934	Domestic Gas Appliance Pressure Regulators, Listing Requirements for	.35
Z21.19-1942 R1947	Refrigerators Using Gas Fuel, Approval Requirements for	1.00
Z21.20-1940 R1947	Automatic Pilots, Listing Requirements for	.50
Z21.21-1935 R1947	Automatic Main Gas-Control Valves, Listing Requirements for	.50
Z21.22-1935 R1947	Relief and Automatic Gas Shut-off Valves for Use on Water Heating Systems, Listing Requirements for	.40
Z21.23-1940 R1947	Gas Appliance Thermostats, Listing Requirements for	.50
Z21.24-1941 R1947	Semi-Rigid Gas Appliance Tubing and Fittings, Listing Requirements for	.50
Z21.25-1937	Gas Hair Dryers, Approval Requirements for	Withdrawn
Z21.26-1941 R1947	Attachable Gas Water Heating Units, Listing Requirements for	1.00
Z21.27-1940	Hotel and Restaurant Deep Fat Fryers, Approval Requirements for, with Addenda Z21.27a-1946 (Addenda Z21.27a-1946 sold separately 40¢)	1.40
Z21.28-1941 R1947	Portable Gas Baking and Roasting Ovens, Approval Requirements for	1.00
Z21.29-1941 R1947	Furnace Temperature Limit Controls and Fan Controls, Listing Requirements for	.50
Z21.31-1941 R1947	Gas Counter Appliances, Approval Requirements for	1.00
Z21.32-1942 R1947	Gas Appliance Connectors of Flexible Metal Tubing and Fittings, Listing Requirements for	.50
Z21.33-1942 R1947	Installation of Gas-Burning Equipment in Power Boilers, Requirements for	.50
Z21.34-1942 R1947	Gas-Fired Duct Furnaces, Approval Requirements for	1.00
Z21.35-1945	Gum Protective Devices, Listing Requirements for	.50
Z21.36-1945	Low Water Cut-Off Devices, Listing Requirements for	.50

Herewith is a list of gas-burning appliances, approval and installation requirements, with price of each. The R 1947 indicates reaffirmed this year. For ten or more copies, suitable discounts apply.

CRUSE-KEMPER COMPANY
AMBLER, PENNA.

GAS HOLDERS

Low Pressure High Pressure Inspection
Purifiers Tanks Flues

Over 40 Years of Sound
Steel Plate Construction

How to "keep out of the *LANDSCAPING BUSINESS"*

Here's the house
you've got to get your pipe-line to!
Hazard No. 1 . . .
is a "jungle" of expensive landscaping impossible to trench thru.
Hazard No. 2 . .
is a paved, heavy traffic, street.

Solution . . .
a HYDRAUGER will bore an open-hole for *your pipe-line,* under the street, under the expensive landscaping, and right into the basement of the house if you want. And that's how to keep out of the landscaping business!

HYDRAUGER*
*Reg. U. S. Pat. Off.
EARTH BORING TOOL
HYDRAUGER CORPORATION, LTD.
116 New Montgomery St., San Francisco, Calif.

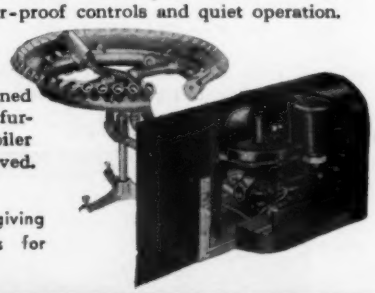
"The Gem of Them All"
COLUMBIA CONVERSION GAS BURNERS

More Popular Than Ever
With Home Owners and Dealers

DEALERS SAY—Columbia Nutipe Burner has a common sense design. Closely duplicates operation of appliance when solid fuel was used. Easy to install. Seldom requires service.

HOME OWNERS SAY—Gives quick heat transfer and earlier delivery of heat to rooms. Has tamper-proof controls and quiet operation.

MODEL P-ZE
shown here is designed for use in warm air furnaces or round type boiler where grates are removed.



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Recent Court Decisions
Affecting Gas Utilities

Review of New Negligence Law Suits

By
Leo T. Parker
Attorney at Law
Cincinnati, Ohio

A FEW DAYS ago a reader wrote, in part, as follows: "Our company has in the past won favorable verdicts in several suits using your citations. Now, we have a suit which we can win if we prove to the jury that a gas explosion was not caused by negligence of our employes who installed a meter in a basement. Can you assist us by citing new higher court cases?"

Since this subject of law is interesting and informative to all readers, we shall in these pages review late and leading higher court decisions on "negligence," and testimony necessary to establish it.

Customary Test Omitted

According to a recent higher court "negligence" of gas company employes may consist of an omission to make customary tests of gas lines before turning on gas. Moreover, although there is no direct evidence of such omission the jury may, from the testimony, infer negligence and hold the gas company liable for an explosion.

For example, in Taylor-Green Gas Company, Inc., v. Newcomb, 195 S. W. (2d) 307, it was shown that a property owner requested a gas company to install a meter in his building. Two gas company employes commenced its installation at about 8:30 o'clock that morning. They finished their work at about 8:40. Twenty minutes later an explosion occurred seriously injuring two plumbers whom the property owner had employed to install a gas line from the first to the second floor of the building and to connect thereto a stove in an apartment on the second floor. The testimony showed that when the plumbers entered the basement, after the gas company employes had left, they detected a strong odor of gas, and decided to turn the gas off immediately. Before they could do so, a terrific explosion occurred. The entire floor on the lower story of the building was blown from the joists, and, as above stated, the plumbers were seriously injured. They sued the gas company for damages.

During the trial the gas company employes testified they had inspected the meter the day before, and it was in perfect condition. However, they admitted that they *did not run* the test usually and customarily made to determine if there were any leaks in the meter or in the line. This test usually is made by turning on the gas and observing an indicator on the meter. They attempted to excuse themselves for failure to make this test, by stating that they asked the property owner if he wanted the gas turned on, and, receiving a negative reply, they departed without making the test. The property owner denied that he directed the men not to turn on the gas.

In view of this testimony the jury held the gas company liable in damages deciding that the gas company employes were negligent in failing to thoroughly test the pipes for gas leaks after installing the meter and before leaving the building. The higher court approved the verdict, and said:

"It is true that there was no direct evidence that the meter was defective, or that it was negligently installed; but there was an abundance of proof of circumstances from which the jury reasonably might have inferred negligence in its installation."

Also, see the leading case of Taylor-Green Gas Company v. Stearman, 262 Ky. 61, 89 S. W. (2d) 305. The facts are that gas company employes installed a meter in a home on the day before a fire was discovered, which destroyed the building and its contents.

The property owner sued the gas company and proved these facts: One afternoon an employe of the gas company went to the home to remove the old meter which had ceased to register, and to install a new one. When he removed the old meter, he found that the top gasket was stuck to the nipple that went into the pipe. He installed the other meter, turned on the gas, and tested it for leaks by striking a match. There was a leak at the top of the meter, and the employe fanned out the blaze with his cap, cut off the gas, put in a new gasket, screwed down the unions, and tested again with a match. He found no indication then of a leak at that point. About 10 o'clock on the following morning there was an explosion and fire destroyed the home. The higher court held the gas company liable, saying:

"There was positive testimony, that the fire originated at the meter which was owned and controlled by the company, and which had been installed by one of its employes a few hours before the fire was discovered . . . There was evidence that no one was in the basement where the meter was located after appellant's (company's) employe tested it and before the fire was discovered, and that he failed to follow the customary and proper practice in testing meters for leaks, in that he failed to turn off the gas after striking a match, although no blaze indicating a leak was observed by him."

For comparison see Wilson Gas Utilities Corp. v. Baker, 124 S. W. (2d) 489, and Bishop v. Walker et al., 172 S. W. (2d) 224. In the Baker case, the testimony showed that a gas explosion occurred when gas leaked from a defective gas pipe, installed in the building by its owners, not by the gas company. The higher court promptly held the gas company *not* liable because *no* gas company employes had inspected and approved the installation of the new gas pipe.

In the Bishop case, the meter had

been installed six days prior to an explosion. On the forenoon, of the day of the explosion, a plumber summoned by the property owner removed a stove from an office to another room, and installed a new and larger gas stove in the office. Some hours later, a gas leak was discovered in the stove in the office, and the plumber was called to locate the leak. He applied a lighted match to the pipe connecting the stove which he had installed. The lighted match ignited the gas at the stove, causing the explosion and resultant fire. The evidence was conclusive that the proximate cause of the injury was the negligence of the plumber in installing the stove, and that *no* negligence on the part of the gas company caused the accident.

Hence the gas company was held *not* liable in damages to the property owner.

Must Prove Negligence

Modern higher courts consistently hold that a gas consumer who sues a gas company for damages caused by escape or explosion of gas must prove that negligence of the gas company's employes caused the damage. Otherwise, the gas company is not liable. Another important point of law is that if a gas company proved that gas was turned off before the explosion, the company never is liable in damages.

For illustration, in Fordham v. But Gas & Equipment Company, 198 S. W. (2d) 607, it was shown that a property owner sued a gas company to recover damage to his home which he alleged was set on fire by escape of gas. The gas company proved that the property owner called the gas company, to work on the gas system, and that before the employes left they turned off the gas.

A fire occurred a few days later burning the garage, kitchen, back porch and roof of the house. The higher court refused to hold the gas company liable, saying:

"There is no merit in the point, for the simple reason that there was no evidence of escaping gas which could have caused the fire. Had it been shown by circumstances, that the fire was or could have been caused by escaping gas, the positive evidence that the gas was cut off at the source at and during the time of the fire, precluded the indulgence of the presumption that gas was escaping, ..."

Experts Testify

Quite obviously since a gas company may avoid liability by proving circumstantial facts, one claiming damage resulting from a gas explosion may prove by circumstantial evidence that the explosion resulted from negligence of the gas company's employes.

For instance, in Hardwick v. Kansas City Gas Company, 195 S. W. (2d) 504, it was shown that a woman was standing in front of a building when an explosion blew up the sidewalk, causing her death. Her husband sued the gas company for $10,000 damages. The testimony showed that the center or greater force of the explosion was in the vicinity of the gas meter on the wall of the building and just above a manhole over the west end of a tunnel. The gas company sought to persuade the jury, with its evidence, that the explosion was due to conditions within the building, conditions over which the owner of the building and not the gas company had control. It was the gas company's theory that the explosion came from pipes within the basement of the building and that the explosion broke a four inch main, which in subsequent investigation was discovered broken. The gas company also proved that all parts of the premises, for which it was responsible had been regularly inspected and that every reasonable precaution had been exercised.

However, the husband proved by *expert* witnesses, the following: The gas company's four inch main was cast iron and had been in use for thirty-five years. Shortly after the explosion there was an odor of natural gas at the opening in the sidewalk at the street level. Soil removed from around the broken main had a bluish or grayish cast as if discolored by gas escaping over a long period of time. The expert witnesses testified, in their opinions, that the four inch main was improperly laid, both as to depth and the nature of the backfilling of clay and rocks, especially in view of the vibrations from the heavy vehicular traffic on the Avenue. They gave it as their view that the main had been broken a long time, not by the explosion, and that gas had escaped from the broken main, followed the path of least resistance down the trench of clay and rock to a pocket near the building wall and on into the tunnel.

The higher court held the gas company liable for $10,000 damages, saying:

"The evidence as to the source and cause of the explosion was circumstantial . . . Admittedly the four inch main was broken. It was laid upon solid rock but two and one-half feet below the surface of the street. According to the plaintiff's evidence it was improperly laid and backfilled and it could have been broken by the vibration of the heavy traffic."

Thus, it is quite apparent that this court decided that installation of the gas main only two and one-half feet below the surface of a street, having thereon heavy traffic, was legal negligence, particularly in view of the fact the installation had been made thirty-five years previously. Further, this court indicated that the gas company may have avoided liability if it had proved that recently it had inspected this old cast iron gas main, and found it in good condition.

Weight of Testimony

Considerable discussion has arisen from time to time over the legal question: If both a gas company and an injured consumer introduce testimony favorable to themselves, which will be awarded a favorable verdict? The answer is: The jury may decide.

For illustration, in D'Entremont v. Boston Consol. Gas Company, 70 N. E. (2d) 700, it was shown that a woman sued a gas company for damages. The alleged illness suffered by her by reason of the gas company's negligence in permitting gas to escape from a defective meter. The gas company defended the suit on the grounds that the woman was pregnant and suffered nausea and dizziness not resulting from gas escaping from a defective meter but because of her pregnant condition.

The jury decided that escaping gas caused her illness. The higher court approved the verdict saying that whether nausea and dizziness suffered by the pregnant woman were caused by gas, which escaped from a defective meter under gas company's control, was for the jury to decide. Also, this court held that the woman was entitled to a favorable verdict since there was greater likelihood that her illness was attributable to gas than to the pregnancy.

Negligence Not Proved

It is well established law that if an injured person fails to prove that his injuries resulted from negligence of the gas company, the latter will not be held liable. Furthermore, proof that gas company employes exercised reasonable care to prevent the injury, in combination with other relevant testimony, always results in a favorable verdict for the gas company.

For illustration, in Huber v. Philadelphia Gas Works Company, 50 Atl. (2d) 203, it was shown that

employes of a gas company were engaged in laying gas pipes in a sidewalk, and in course of that work had dug a trench. The trench was about five feet deep and about three feet wide. It extended parallel with the curb. When gas company's workmen stopped working in the evening, the sidewalk was barricaded. Red lights were on the barricade and also red lights were placed along the trench sides.

The following morning a pedestrian was found lying in the trench. He was suffering from severe injuries. He died and his wife sued the gas company for damages.

In view of the testimony that the gas company's employes had taken precautions above described to safeguard pedestrians from injuries, and no proof was given that negligence of the gas company's employes caused the accident, the higher court refused to hold the gas company liable, and said:

'The net result of the testimony is that nobody knows how (pedestrian) got into the trench or was injured.' The burden of proof was on the plaintiff. She failed to prove that the employe's injury resulted from any breach of duty by defendant (gas company)."

Company's Building Is Dangerous

Frequently, customers are injured in public buildings owned and occupied by gas companies. Generally speaking, these injured customers cannot recover any damages if they fail to prove that authorized officials or employes of the company *knew* that the dangerous condition existed, or that the dangerous condition had existed for a long period in which a company official or employe could have discovered and removed the condition by exercise of ordinary care.

For illustration, in Fazio v. Stanley, 47 N. E. (2d) 957, where a customer sued to recover damages for an injury when she fell upon the floor in the ladies' room. The injured person proved that the room contained a drinking fountain, and that there was water upon the floor upon which she slipped.

However, since the injured person failed to prove that the officials of the company knew that the drinking fountain was leaking, and caused a slippery floor, the higher court refused to hold the injured person entitled to recover damages.

Also, see Mandigo v. Hamid Company, Inc., 57 N. E. (2d) 553, where a person was injured when he slipped on candy.

The higher court refused to hold the injured person entitled to recover damages because he failed to prove that the candy had been on the floor a sufficient length of time that the management could have, by the exercise of ordinary care, discovered and removed the candy from the floor. This court said:

"There was no evidence that he (official) had seen the substance on which the plaintiff slipped, and the nature and condition were such that an inference would not be warranted that it had been on the floor so long that it should have been seen and removed."

Harbison-Walker Acquires Louthan of East Liverpool

Mr. Raymond Willey, President of Harbison-Walker Refractories Company, Pittsburgh, Pennsylvania announced recently the purchase by Harbison-Walker Refractories Company of the Louthan Manufacturing Company of East Liverpool, Ohio.

The Louthan Manufacturing Company, founded in 1901, has enlarged its field of operation to backwalls and radiants for radiant type of gas heaters, and electric appliance ceramics. Charles W. Gerster is General Manager.

The acquisition of this plant opens an entirely new field of products to Harbison-Walker.

IRON SPONGE *over 72 years*

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Extra high capacity and activity on first and repeated foulings . . . longer periods between necessary recoverings . . . fast "come back" after fouling . . . low initial cost . . . low maintenance . . . minimum operator attention. These are the advantages of Iron Sponge and the reasons why Iron Sponge has been the gas industry's choice as a purification material for over seventy-two years. With today's increased demands on gas producing facilities, such advantages as these are doubly important. Other Connelly products for the gas industry include:

CALOROPTIC. A simple, inexpensive instrument for continuous direct readings and control of BTU's applied to manufactured, natural, propane and butane air gas.

H_2S TESTER. For quick, accurate tests using pre-treated paper discs.

pH TEST KIT. A complete outfit for accurate pH determinations. Includes universal indicator solution, test tubes, color chart and full directions. A handy 3″ x 5″ pocket case holds the entire outfit.

Connelly engineers are prepared now, as always, to assist you with any problem in gas purification. Our files and laboratory facilities are at your service without obligation.

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Columbia Gas System, operating more than 30,000 miles of gas transmission and distribution lines, serves nearly 1,000,000 homes, industries and commercial enterprises in New York, Pennsylvania, Ohio, Virginia, West Virginia and Kentucky. In addition, The System supplies gas at wholesale to other utilities including those serving Washington, D. C., Cincinnati and Dayton, Ohio and their territories.

COLUMBIA GAS SYSTEM

is comprised of

The Ohio Fuel Gas Company

The Manufacturers Light and Heat Company

United Fuel Gas Company

and other Operating Companies

Columbia Gas & Electric Corporation
(*the parent company*)

Columbia Engineering Corporation
(*the service company*)

Extent of Gas Flame Impingement Allowable for Satisfactory Combustion

FACTORS affecting combustion of fuel gases due to flame impingement, such as type of gas, variations in material and surface impinged upon, temperature at the impingement surface, effect of primary aeration, extent and method of obtaining secondary aeration, and effect of flame height are analyzed and discussed in Bulletin 43, recently issued by the American Gas Association Testing Laboratories.

The findings reported are the results of studies conducted as project DGR-4-B, under the supervision of the Technical Advisory Group.

The Problem

Due to the fact that the thermal efficiency and heating speed of appliances utilizing gas as a fuel usually approaches a maximum as the distance between the burner and the surface heated is reduced to some limiting value, the trend in modern gas appliance design has been toward minimizing this space as much as possible. The principal limiting factor involved in reducing this spacing is the ability to obtain satisfactory combustion. In compromising among high efficiency, speed and combustion, many gas appliance manufacturers apply a rule-of-thumb principle derived from practical experience which dictates that burner flames shall approach but not impinge to any marked degree upon cold surfaces.

Although it is common knowledge that impingement of gas burner flames against relatively cold surfaces, such as metals with high heat transfer coefficients, generally results in poor combustion, there appears to be no published data which define this phenomenon quantitatively. Neither has the effect of flame impingement on surfaces of low heat conductivity been clearly defined, although it is recognized that flame impingement on ceramic surfaces, for example, does not interfere with combustion to such a marked degree as impingement on a cold surface.

If a cold object is placed in the outer mantle of an aerated flame, it may be possible to chill the gases below their ignition temperatures. If placed in the inner cone of the flame, chilling of the gases below their ignition temperatures invariably occurs and causes incomplete combustion. These combustion properties must be given careful consideration when air or water-backed metallic heating surfaces are used in conjunction with burner applications, such as in the oven of a domestic gas range or in an underfired automatic storage gas water heater.

On the other hand when a gas flame impinges on a porous refractory surface this impingement appears to promote completeness of combustion and to accelerate the speed of the reaction. In this instance it is believed that temperatures at the point of impingement may exceed the ignition temperatures of the gas-air mixtures and thereby account for the difference from results obtained with metallic heating surfaces.

Interpretation of Findings and Recommendations

1. When using aerated burners under similar conditions of primary air injection and type of surface impinged upon, fast burning gases permit more impingement from the standpoint of acceptable combustion than slow burning gases.

2. For any given fuel gas and type of surface impinged upon, the amount of acceptable flame impingement may be increased by increasing the temperature of the surface.

3. Due to flame characteristics, the temperature of the surface impinged upon increases slightly with increasing flame impingement until the hottest portion of the flame, which is just above the tip of the inner cone, is reached. Further flame impingement beyond this point causes the surface temperature to decrease gradually with more interference with the combustion reaction.

4. As the amount of primary air and/or secondary air increases, the amount of flame impingement consistent with satisfactory combustion increases.

5. Of six factors investigated, surface temperature appears to be the major one affecting satisfactory combustion with flame impingement. The type of gas, primary or secondary aeration, flame heights, and nature of the material seem to be of secondary importance within the ordinary range of variations in these factors that occur in practical applications.

6. Future research work should include a comparison of aerated and non-aerated flames, studies over a greater range of impingement surface temperatures than those included in this report, a study of flame impingement at various angles, burning properties of other gases, and extension of the work to include other burners and other types of impingement materials.

The Results

1. With each burner operated under similar conditions of flame impingement, primary air injection and type of surface impinged upon, combustion was more acceptable when using manufactured gas than when using natural gas. As flame impingement was increased combustion became increasingly less complete with natural gas than with manufactured gas.

2. With all three burner types studied, there was more allowable flame impingement on a ceramic disc than on a steel disc, and more allowable impingement on a steel disc than on a copper pan filled with boiling water within the limits of satisfactory combustion.

3. With increasing amounts of flame impingement and with all other factors remaining constant, the temperature of the surface impinged upon increased until the hottest part of the flame was reached, and then it slowly decreased.

4. Surfaces which attained high temperatures and thus apparently aided the combustion reaction permitted a greater amount of allowable flame impingement for satisfactory combustion than surfaces at lower temperatures.

5. An increased amount of flame impingement was found to be acceptable from the standpoint of satisfactory combustion as the primary air injection or the secondary aeration of the flame was increased.

6. Impingement of the inner cone of the flame was found to be acceptable on a ceramic surface when sufficient air was present to permit complete combustion, probably due to the surface temperature being above the ignition temperature of the fuel gas. Impingement of the flame's inner cone on metallic surfaces usually resulted in poor combustion because their temperatures were below the ignition temperature of the fuel gas.

7. Within the usual limits of variation to be encountered with a given appliance in normal utilization, primary and secondary aeration, flame height, and composition of gas were found to have a secondary effect on combustion obtained with impinging flames. The nature of the material being heated and the temperature it attains were found to be the major factors affecting combustion with impinging flames.

New Jersey Gas Association, Thirty-Second Annual Conference

AFTER a lapse of five years, the New Jersey Gas Association held its Thirty-second one day Annual Conference at the Stacy-Trent Hotel, Trenton, N. J., September 23rd. Attendance about 400.

Most of the speakers stressed various phases of customer relations and gave from their experience samples of what *not* to do.

Henry R. Flanegan, Asst. Manager, Philadelphia Elec. Co. outlined many of the company activities that are necessary to build good customer relations. "It is the job of management to train employees and follow through" he said, "If customers are not satisfied, then company efficiency has failed."

Edwin L. Hall, Coordinator, American Gas Association, outlined the Promotion, Advertising and Research programs. " 'Gas Has Got It' campaign must go on for years" he said. "The efforts of all interested are necessary."

Col. Hudson W. Reed, President, Philadelphia Gas Works, was unable to be present, and his salutation to the members was presented by Wallace G. Murfit, Manager, District Office of the Company.

A paper prepared by Robert E. Ginna, Vice President, Rochester Gas & Elec. Corp., was read by Donald K. Smith of that organization. The paper was on "What to Do About House Heating." He discussed the customer acceptance of gas house heating and the shortage of heating appliances and in many cases the shortage of gas to service them and said, "For the moment the customer is tolerant of our inability to serve him and perhaps believes it is all part of the general economic situation but how long is he going to wait while some of us endeavor to decide:

1. Whether or not we shall get enough natural gas in time.
2. Whether or not to put in more water gas sets.
3. Whether or not to make high Btu. gas.
4. Whether or not to build more coke ovens.
5. Whether or not to increase distribution pressures.
6. Whether or not to sit it out in hopes that someone else will find some new production method.
7. Whether or not to raise the house heating rate drastically to a prohibitive level so as to discourage the business altogether.
8. Whether or not atomic energy will come in time.

"No!! the thousands of Joe Smiths who are waiting to enjoy the comforts of automatic heating with that clean fuel—Gas—are not going to come forward to help the gas utilities solve their problem—they expect us to be able to run our own business, manage our own problems, and serve all comers according to our franchise obligation without discrimination.

Obviously, our job is to get back in the house heating business in a big way and if we need adventurous men of vision to do it, leta us get them before it is too late."

He summarized briefly some further points for consideration in tackling the house heating problem.

1. You cannot go on telling customers about shortages. Commission is apt to take action.
2. You need research.
3. If House heating load is of such magnitude that you cannot take care of it, restriction might better be by rates, not by edict.
4. Now is the time to consider rate increases—so one does not build up load that will drop off at first business recession.
5. You may be able to increase capacity of distribution system and equipment by increasing thermal value within interchangeability limits.
6. Your customers, during restrictions should be told frequently about efforts to make house heating available to them.
7. Maybe we can learn tricks about serving large house heating concentrations by studying properties having large saturations of it.
8. You may, without question, have to abandon 18-carat (free) servicing policy and start charging for everything.
9. Encourage people to use storm windows, weather stripping, etc.—to keep demand down and hang on to load.
10. Anticipate needs for equipment far in advance. Cannot work on a hand-to-mouth basis.
11. Support Research.

And above all, I beg you to remember what a Customer is:

A Customer is the most important person ever in your office--in person or by mail.

A Customer is not dependent upon us—We are dependent upon him.

A Customer is not an interruption of our work—he is the purpose of it. We are not doing him a favor by serving him—he is doing us a favor by giving us the opportunity to do so.

A Customer is not an outsider to our business—he is a part of it.

A Customer is not a cold statistic —he is a flesh-and-blood human being with feelings and emotions like our own, and with biases and prejudices.

A Customer is not someone to argue or match wits with. Nobody ever won an argument with a customer.

A Customer is a person who brings us his wants. It is our job to handle them profitably to him and to ourselves.

The new officers for the coming year are President, H. A. Sutton, Camden, N. J.,First Vice President, H. H. Melvin, Millville, N. J., Second Vice President, L. W. Becker, Jr., Elizabeth, N. J., Secretary, E. A. Smith, Newark, N. J.

Chairman of the meeting was the retiring president, P. D. Gardner, Camden. N. J.

Jones with Glenwood

The appointment of Robert Haydon Jones as Vice-President in Charge of Sales of the Glenwood Range Company, Taunton, Mass., has just been announced by Malcolm Leach, President of the company.

Wilbur L. Lawson, recently Acting Sales Manager and Advertising Manager of the company, has been appointed assistant to Mr. Jones and will be active in the Sales and Advertising Departments. He has been associated with Glenwood since 1935.

Ruud Elects Officers

At the annual election of officers of the Ruud Manufacturing Company, Pittsburgh, Pa., K. M. Clark, formerly secretary and treasurer, was advanced to vice-president and treasurer. W. M. Latta was elected secretary.

Other officers re-elected were M. G. Hulme, chairman of the board, R. H. Lewis, president, J. H. Sorg, vice-president and general counsel, M. M. Scott, vice-president, and J. K. Roth, assistant secretary and treasurer.

"SATISFIED CUSTOMERS ARE SELLING A LARGE PERCENTAGE OF MY WARD FLOOR FURNACES FOR ME"

Having sold Ward Floor Furnaces in Montana for the past 17 years, I feel I am qualified to judge their merits. I do not know the number of Wards that I have installed here but it must run into the hundreds, and of that number I do not have one dissatisfied user. Each and every customer says they have experienced not only the smallest gas bills they have ever had but their homes and offices have been heated to perfection.

Satisfied customers are selling a large percentage of my Ward Floor Furnaces for me.

Montana weather is very cold, sometimes getting 40 degrees below and holding that temperature for days. Ward heated homes still have warm floors and comfortably heated rooms.

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DEALERS: No other floor furnace on the market has the acceptance that Ward enjoys... the enthusiastic approval of satisfied Ward owners. They do a big part of the selling job for you!

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Rising Costs of Manufactured Gas

(Continued from page 20)

Philadelphia Gas Works Company. The rates of this company were increased 5 cents per M as of January 22, 1947. For large consumption the increase was somewhat greater. The last previous change was in 1942.

Consolidated Gas, Electric Light and Power Company of Baltimore. As of April 1947 rates were increased by revising the various blocks of the schedule as follows:

Old Rates (domestic service)	
4,000 cu. ft.	$.85 per M net
20,000 cu. ft.	.65 " " "
Additional	.55 " " "
Effective May 1932	

New Rates (residential service)	
400 cu. ft. or less	$1.00 net
3,100 " " " "	.85 per M net
11,500 " " " "	.65 " " "
Additional	.55 " " "
Effective April 1947	

Rates with Fuel and Oil Surcharge Clauses

In New England the Commissions have generally handled the main features of price increases through coal and oil surcharges applied to the basic gas rates.

Massachusetts and Connecticut appear to have been leaders in this type of rate adjustment.

In Massachusetts, while no formal method of handling the matter has been put on record so far as the gas industry is concerned, the Department of Public Utilities did order an investigation of fuel clauses included in the rate schedules of electric utilities. Its report, D.P.U. 7357, dated March 19, 1946 is of interest and importance to gas companies. It says in part:

"It would appear that fuel clauses had their origin probably at the time of World War I and had since been continud in the schedules and contracts showing the lowest rates. During World War II their use was extended to other schedules and contracts and are continued today because of the increased cost of fuels and the present threat of inflation. In general, fuel clauses may be established on two basic ideas, to recover the increased cost of fuels above a certain level, or meet on a competitive basis and to maintain a price for energy in harmony with its cost if fuels had been used in its production. The current trend is, it would appear, that since rates are predicated on the cost theory, a fuel clause should primarily be for the recovery of those increased costs resulting from fuels used in producing the energy to be sold."

. . . . . .

"Fuel clauses in the Commonwealth at the present time vary widely in type and basic characteristics. However, the majority follow a more or less general pattern in that the cost per unit of energy is increased at some fixed amount for each increment increase in the cost of some fuel above a fixed base price for the fuel. There appears to be considerable variation in the form of the fuel clauses used and in the underlying principles on which they are predicated and determined in the several companies. The greatest variations in base fuel cost, rate of fuel adjustment, and resultant fuel charge seem to be in those clauses appearing in special contracts. It is recognized that each company is an entity in itself and that because of the variable conditions under which they are obliged to operate it would be impractical and unjust to prescribe one fuel clause to be applicable to all companies. On the other hand, it appears from the answers to the questionnaire and the Department's experience, very desirable that certain general basic principles be established, and terms defined under which existing clauses would be modified and new clauses designed.

"We believe, as a basic principle, that the objective of any fuel clause should be to recover increased costs of energy due to fuels. Increased costs due to taxes, labor and materials are not a part of the fuel costs, and as such should be excluded. If the costs of fuel were to substantially decline, the price for energy sold should also decline. To prevent small variations becoming applicable it should be possible to establish a neutral zone, in the base price of fuel where a charge would not be created.

"Any fuel clause should have set forth the base cost of fuel and the fuel adjustment rate to be applied to those units of energy sold under the schedule containing the applicable clause.

"There was observed a wide variation in existing clauses in determining how and where the price of fuel would be established. It appears that the most practical point to fix a cost of fuel would be 'along-side' the plant. This would exclude handling charges in the plant and make possible a better comparison of costs to the various companies. Also for comparative purposes and to harmonize with the companies' annual returns filed with the Department and also trade practices pertaining to the merchandising of coal, a net ton of 2000 lbs. should be uniformly used in all fuel clauses as an appropriate unit of measure."

. . . . . .

"At the public hearing held on December 27, 1945 on the acceptance of a proposed set of principles relative to fuel clauses, which are substantially the same as those set forth in this order, there was no substantial objection or criticism."

Thus, it is to be noted that according to the Massachusetts Commission the fuel and oil surcharge, which permits automatic rate adjustment is limited to the delivered or along-side prices of coal, coke, oil and residuals for its operation. Taxes, the wages of labor and the changed kinds of materials or efficiencies in their use are definitely excluded from the automatic, adjustment provisions. The Commission at all times retains jurisdiction over rates and service and will exercise it when any important operating change occurs. Also, the company may make application for a rate adjustment when it believes occasion has arisen. For example, the progressive increase in labor costs will naturally make it necessary for the company to call for rate adjustments from time to time in addition to those provided for in the fuel and oil clauses. The latter take care currently of the obvious and more important inequities which would otherwise constantly occur.

It was noted particularly that the operation of this rate system was very friendly indeed. There seemed to be excellent cooperation between the Commission and the gas companies and so far as we could learn its operation had been virtually without complaint from the public.

Fuel and oil adjustments have varied substantially in amount. That of Cambridge Gas Light Company rose from 1 cent per M for June 1942, 5 cents per M in January 1943, 6 cents per M in January 1945, 4 cents per M in January 1946 and 9 cents per M in February 1947. Thereafter work on change from water gas to high Btu oil gas has caused a substantial change in rates and fuel and oil adjustment.

At Springfield, Massachusetts the fuel and oil adjustment was 2 cents per M in July 1944, 4 cents per M in July 1945, 7 cents per M in July 1946 and 19 cents per M in August 1947.

Changes in rates for gas service are taking place so rapidly that they can not be covered currently in adequate detail. It is planned to do so in a future issue, however if occasion warrants.

News of the Gas Industry

Republic and Dominion Promotes Seven

Promotion of seven executives of the Republic Light, Heat & Power and the Dominion Natural Gas Companies are announced by President S. B. Severson.

Mr. John R. Reeves, General Superintendent of the Republic Light, Heat & Power Co., was elected Vice President of that company. Mr. Donald A. Hamilton, Assistant Treasurer of the Republic and Dominion companies, was named Treasurer of both companies.

Mr. D. P. Spencer, Assistant Secretary of the two companies, was made Secretary of both the Dominion and Republic Companies.

Mr. H. P. Nagel was elected Assistant Secretary of the Republic Company. Mr. Howard F. Moore and Mr. Walter G. Stroman were named Assistant Treasurers of both the Republic and Dominion Companies. Mr. Robert M. Robinson was elected Assistant Secretary of the Dominion Company.

The changes were made to fill vacancies resulting from the death of Mr. James A. Richie, who had served as Vice President, Secretary, Treasurer, and a Director of the Republic and Dominion companies for many years.

New members, who were added to the Republic Board of Directors, are Messrs. Reeves, Hamilton and Moore. Mr. Reeves was also made a director of the Dominion Company.

Mr. Reeves, the new Vice President of the Republic Company, also holds the same office in the Dominion Natural Gas Co., Ltd., and the Penn York Natural Gas Corporation.

Republic Light, Heat & Power Co., Inc., distributes manufactured and natural gas to numerous communities in western New York, including Kenmore, Tonawanda, Niagara Falls, Batavia, and Dunkirk. The Dominion Natural Gas Co., Ltd., supplies natural gas to a large number of communities in Southern Ontario, Canada, including Brantford, Galt, Woodstock, St. Thomas, St. Catharines, Simcoe, and Dunnville.

The Republic Light, Heat & Power Co., Inc., and the Dominion Natural Gas Co., Ltd., are subsidiaries of the Cities Service Company, and their head offices are located at 220 Delaware Avenue, Buffalo, N. Y.

Annual Meeting I.N.G.A.

The third annual meeting of the Independent Natural Gas Association of America will be held at the Skirvin Hotel, Oklahoma City, Okla., October 24th.

A comprehensive program has been arranged for the one-day meeting. Some of the speakers will be W. F. McConnor, vice president, National Tube Co., on "The Steel Pipe Outlook," R. G. Tabor, president, Atlanta Gas Light Co., on "The Problems of the Distribution Company as Related to Producers and Transporters." Gale F. Moulton, Chase National Bank, New York, on "Gas for Tomorrow."

A.G.A. Industrial Gas Breakfast

The next Industrial Gas Breakfast sponsored by the Industrial and Commercial Gas Section, American Gas Association has a special significance because it will be the 10th anniversary of these annual affairs held during Metal Show Week.

This year it will be held on Wednesday morning, 8:30 A.M., October 22, in the South Ballroom of the Hotel Stevens, Chicago. Ten years ago at Atlantic City during the National Metal Congress and Exposition a few gas men got together for an intimate breakfast. Throughout the years this custom has continued until it has become a tradition in gas industry activities during Metal Show Week. Many nationally known speakers have addressed these large gatherings of gas men, metals magazine editors and equipment manufacturers, and this year Mr. Gerald E. Stedman, widely-known writer on industrial heating subjects will be the guest speaker.

Dominion Natural Gas Co. Executives. Left to right: Donald P. Spencer, Secy.; John R. Reeves, Vice President; Donald A. Hamilton, Treas.

CONVENTION CALENDAR

October

6–8 *American Gas Association, Annual Convention,* Cleveland, Ohio.
16–17 *Texas Mid-Continent Oil and Gas Association,* San Antonio.
20–24 *National Metal Congress,* Amphitheater, Chicago.

November

10–14 *National Hotel Exposition,* Grand Central Palace, New York, A.G.A. Exhibit.
10–13 *American Petroleum Institute,* Stevens Hotel, Chicago.
13–14 *Mid-Southeastern Gas Association,* Raleigh, N. C.
20–21 *New England Home Service Conference,* Boston, Mass.

January

22–24 *A.G.A. Home Service Workshop,* Congress Hotel, Chicago.

February

2–6 *Eighth International Heating and Ventilating Exposition,* Grand Central Palace, New York.

March

18-19 *New England Gas Association,* Annual Meeting, Boston.
24-26 *Southern Gas Association,* Galveston, Texas.
29-31 *Mid-West Regional Gas Sales Conference,* Edgewater Beach Hotel, Chicago.

April

5–7 *G.A.M.A. Annual Meeting,* Drake Hotel, Chicago.
7–9 *A.G.A. Sales Conference, Industrial & Commercial Gas Section,* Windsor, Canada.
12–17 *National Restaurant Association Show,* Cleveland.
19-21 *Motor Vehicle Conference, A.G.A.* Hotel William Penn. Pittsburgh.
22&23 *Indiana Gas Association Convention,* French Lick Springs Hotel, French Lick, Indiana.

May

4–5 *Natural Gas Department, A.G.A.,* Rice Hotel, Houston, Texas.
18–20 *Pennsylvania Gas Association, Annual Meeting,* Galen Hall, Wernersville, Pa.
24–25 *New York-New Jersey Regional Gas Sales Conference,* Westchester Country Club, Rye, N. Y.
24-26 *Production and Chemical Conference,* Berkeley-Carteret Hotel, Asbury Park, N. J.
27–28 *Natural Gas and Petroleum Association of Canada,* General Brock Hotel, Niagara Falls, Ontario.

KA • MO FOR HORIZONTAL EARTH BORING

Announcing revolutionary applications of Ka-Mo Drills now being used by many major gas, electric, telephone, and water companies for the installation of gas mains and services, electric and telephone conduit, and water mains and services, these installations being under streets, alleys, parkways, lawns, etc.

ADVANTAGES

(1) Fast installation under streets, alleys, sidewalks, and driveways with no concrete breaking, no interruption of traffic, etc.

(2) Installation of services without disturbing lawns, etc.

(3) Drills a *Dry Hole.*

(4) When properly started drills *a straight hole.*

(5) Compact, simple, light equipment.

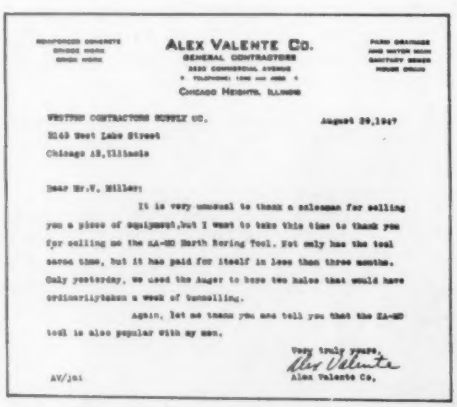
(6) Range in dia. from 3"-17".

(7) Can be air or electrically driven.

Showing drilling operation under a driveway. Note simplicity of operation. No need to break pavement or tunnel. Average drilling speed on this 6" dia. hole 1 ft. per minute.

Showing the small amount and lightness of equipment necessary for this type work.

(8) A flexible piece of equipment which is extremely portable and does not need any heavy auxiliary equipment such as special trucks, cranes, etc.



ALEX VALENTE CO.
GENERAL CONTRACTORS
Chicago Heights, Illinois

August 29,1947

Western Contractors Supply Co.
3149 West Lake Street
Chicago 12, Illinois

Dear Mr.V. Miller:

It is very unusual to thank a salesman for selling you a piece of equipment,but I want to take this time to thank you for selling me the KA-MO Earth Boring Tool. Not only has the tool saved time, but it has paid for itself in less than three months. Only yesterday, we used the Auger to bore two holes that would have ordinarilytaken a week of tunnelling.

Again, let me thank you and tell you that the KA-MO tool is also popular with my men.

Very truly yours,
Alex Valente
Alex Valente Co.

AV/jai

KA-MO TOOLS, INC.

2121 SO. TROY ST. CHICAGO 23, ILL.

Cities Service Gas Co. Starts 36 Million Dollar Pipe Line

Signal for the start of construction activities marking the first step in a 36 million dollar pipeline project of Cities Service Gas Company was given Sept. 17th with the announcement of contract awards by S. B. Irelan, president of the midwestern natural gas system.

First phase of the huge undertaking is the building of a modern residential community and construction of compressor station facilities located on a half-section of erstwhile wheat land in Grant county, Kansas.

The first award was for erection of 51 bungalow - type cottages, a community house for employee recreational affairs, a large office building, garages and utilities, in one deal involving expenditures of over a half million dollars.

A second contract awarded calls for the completion of concrete foundation structures for the main compressor engine building, an auxiliary building for power generation, machine shop and other equipment and the gas-dehydration tower. Approximately 8500 cubic yards of concrete will be required to finish foundation for these large structures.

Total cost of all facilities at the new compressor station community in the Kansas-Hugoton field alone will be more than 5 million dollars, the company estimates.

Plans call for the initial installation of 17,600 horsepower from 11 compressor engine units of 1600-horsepower each, and a delivery capacity of 240,000,000 cubic feet of gas daily by the end of 1948. Between 1948 and 1950 the company will add compressor station capacity to bring the total installed horsepower to 46,400 from 29 engine units.

The facilities for which contracts have just been let with others to be awarded later are part of a huge program to increase Cities Service Gas system capacity by an eventual daily total of 370,000,000 cubic feet through a 400-mile, 26-inch natural gas pipeline extending from the Kansas-Hugoton field across the state of Kansas.

Total cost of the project at completion will be approximately $36,000,000, according to Mr. Irelan.

Erection of the 51 homes for station workers, together with a community house and office building, is expected to be complete within six months. The residence buildings are single-story type of two and three bedroom pre-fabricated design, with individual garage, full basement, gas, electric and water utilities.

Streets through the new townsite are plotted in curve design similar to the most modern suburban development. The new village will have its own water, gas and telephone system. A sewage disposal plant will be installed.

The community house is designed to accommodate employees and their families when social or recreational programs are scheduled. Ultimately the entire site will be attractively landscaped.

Vancouver Electric Railway Co. Completes Modern Gas Plant

Official opening of the new carburetting water gas plant of the B. C. Electric Railway Co., of Vancouver, B. C., was marked with due ceremonies recently. The plant is the most modern of its type on the continent and it is an improved version of the type of carburetted water gas plant which has been in operation in the Keefer Street plant in Vancouver for many years.

The gas is produced by heating coke to incandescence, then blasting it with steam to produce a mixture of gases, mainly carbon monoxide and hydrogen with a small percentage of carbon dioxide. The gas is then enriched in BTU values. Capacity of the plant is 4½ million cu. ft. of gas every 24 hours. The total capacity of the B. C. Electric gas plants in Vancouver is now 13¾ million cu. ft. every 24 hours.

Approximately 100 tons of coke per day will be used. This will be secured by carbonizing approximately 140 tons of coal daily. Formerly this coke was sold for home-heating purposes but with the completion of the new plant all coke is required for making gas with the exception of a small annual tonnage of slack coke known as "breeze."

Approximately 2500 gallons of tar will be produced daily, and will be processed for road building materials, etc. Provision has been made in the erection of the building housing the plant so that another unit of equal capacity may be installed when required. The present plant consists of five main sections: the fuel handling plant, the gas producing plant, the steam producing plant, the gas cooling and cleaning plant, and the gas storage plant.

The entire operation is automatically controlled by a fool-proof hydraulic control system which puts the plant in a safe stand-by position should the operator mistakenly attempt to move a valve out of sequence, or should valves fail to operate due to faulty mechanism.

Necessary steam to operate the plant is produced from a jacket boiler on the generator, and from the waste heat boiler which receives the exhaust gases from the superheater.

A new 100,000 cu. ft. relief gas holder has been erected. This is an all-welded, single lift, column-guided holder designed in England and made in Canada.

The whole of the work has been in the hands of John Inglis Co., Ltd. as main contractors, they having supplied all the equipment based upon the designs of their licensors, the Power-Gas Corp., Ltd. and Semet-Solvay Engineering Corp. With the exception of the hydraulic control system, the exhauster, gas meter and electrostatic precipitator the whole of the equipment has been produced in Canada and has been supplied from all parts of the country, with much of the work sublet to B. C. companies.

The plant was erected at a cost of approximately $1,000,000. Total gas improvements now under way and planned will cost approximately $3,000,000. These include the construction of 24 new and rebuilt coke ovens, to be undertaken as soon as the new water gas plant is broken in; construction of a new high-pressure gas storage tank in New Westminster; Improvements in distribution system, with work now under way on 60 miles of new high and low pressure mains. Additional tie-in mains to improve the grill system of gas mains in various sections of the Lower Mainland have been installed.

Oxygen Manufacturing Plant at Buffalo

The completion of a new oxygen manufacturing plant in Buffalo, New York, is announced by Fred H. Lewis, Sales Manager, Wall Chemicals Division, The Liquid Carbonic Corporation. The new plant will supply oxygen to users in the medical and industrial fields in Buffalo and vicinity. J. J. Kelly is in charge of the Buffalo branch.

The new oxygen plant is a part of the $15,000,000 building expansion program of the Liquid Carbonic Corporation throughout the United States, Canada, Mexico and South America.

Lowden with Western Natural Gas Co.

J. F. Lowden, well-known in gas industry circles in Georgia and Florida, has joined Western Natural Gas Company, 2960 Strickland, as office manager, following some years of activity in another connection. Mr. Lowden was connected with Western Natural in 1939 and 1940, and is a former manager of Consumers Gas Company, Albany, Ga., a butane distributor.

Natural Gas Company Cost Unit Report of F.P.C.

The Federal Power Commission has issued a 40-page study of unusual interest to the Natural Gas Industry.

Subjects covered include plant investment and operating expense units with subdivisions for transmission, production and distribution. Included also are accounting and collecting, sales promotion and administrative and general expenses. Many tables and graphs serve to fortify the text matter.

The studies of natural gas company investment and operating expenses presented in the report are based on data reported to the Federal Power Commission by Class A and Class B natural gas companies for the year 1945.

The studies provide data permitting comparison of construction costs and operating expenses of individual companies with the experience of the industry in general. Costs have been developed in considerable detail as to items covered and analyses of individual items have been extended to permit expression of costs under varying conditions of operation.

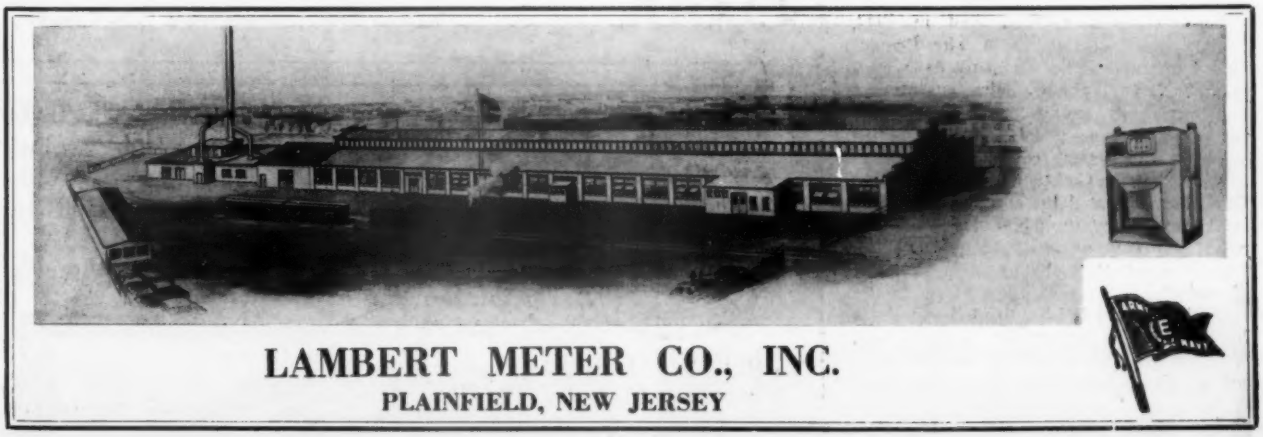
For example, the construction cost per horsepower of installed capacity of a transmission compressor station may be compared to the average cost of other stations of the same size and constructed during periods of comparable price levels.

Average costs of structures and improvements and of equipment as well as total costs are shown.

Average operating expenses of compressor stations detailed as to costs of labor, fuel, other operation expenses, maintenance and in total are given for stations of various sizes and for various rates of operation.

Preparation of the studies involved analyses of reports of an aggregate number of 87 large companies. However, data included in individual sections have been limited to those which appear to be fully and accurately presented in the company reports. The studies, therefore, constitute an assembly and analysis of data as reported without adjustments or introduction of estimates.

For sale by Federal Power Commission, Washington 25, D. C., at 25 cents a copy.



Johnson Retires from Peoples Natural Gas Co.

David Q. Johnson, whose first job was as a common laborer with Hope Natural Gas Company in 1903, retired Sept. 1st from The Peoples Natural Gas Company, Pittsburgh, Pa., as local city plant superintendent.

David Q. Johnson

Mr. Johnson plans to turn to the training of horses which has been his hobby for a number of years. He retires under the Peoples' Annuity Plan through which he has earned a lifetime pension during his years of service.

Mr. Johnson was transferred to the Forbes street service shops of Peoples' in Pittsburgh in 1905 as a fitter. Then he was assigned to Turtle Creek, Pa., as shop foreman where he became local agent for the company. He was made city plant superintendent for Pittsburgh and Wilkinsburg in 1935, the position he held at the time of his retirement.

B. A. Johnson Now in Chicago

B. A. Johnson, who recently resigned from Minneapolis-Honeywell Regulator Company, has moved to Chicago to become active in administrative and consulting work.

Prior to joining Honeywell in 1942, "B.A." was associated with The Peoples Gas Light and Coke Company as a staff engineer and later its sales engineering manager in the Domestic Sales Department where he became widely known for his work on gas heating equipment problems. He left Peoples Gas to work in a Chicago war plant operated by Honeywell. There he soon became its Chief Engineer and after V-J Day moved to Minneapolis to become assistant to the Engineering Vice-President.

With offices at 122 South Michigan Ave., he will act as consultant for Barney Olson, Inc. and Condensation Engineering Corporation, the latter being designers, manufacturers and engineers installing Vitroliner flues and chimneys.

Southeastern Promotion Conference

Executives representing gas utility companies, gas appliance manufacturers, and the American Gas Association, met Sept. 11th, in the Henry Grady Hotel, Atlanta, Ga., to complete plans for the first coordinated advertising, publicity and promotional program ever undertaken by the entire gas industry. Seven states were represented among the utility and manufacturers' contingent attending this Southeastern conference, the area covered including Alabama, Florida, Tennessee, Virginia, North and South Carolina and Georgia.

The ultimate purpose of the program, as pointed out by J. W. Lea of Atlanta Gas Light Company as chairman of the domestic range committee of the American Gas Association, is the replacement of more than 12,500,000 old or outmoded gas ranges now in use, with modern equipment. More than 75 persons attended the conference. Speakers, in addition to Mr. Lea, included: Carl H. Horne, vice president of the Alabama Gas Light Company; J. M. Floyd, advertising director of the Lone Star Gas Company; Clifford E. Hall, assistant director of promotion for the American Gas Association; Lloyd C. Ginn, advertising and sales promotion manager of the American Stove Company, and Miss Gussie Jones, advertising manager of the Atlanta Gas Light Company.

Taylor Instrument Co. Adds to Staff

William D. DeCourcy has just reported to the Pittsburgh Office of Taylor Instrument Companies to take over his duties as industrial sales representative. He will cover the western counties of Pennsylvania with the exception of Allegheny County, as well as part of West Virginia.

Harold M. Messenger, who will cover part of North and South Carolina out of the Atlanta Office, completed a course in Electrical Engineering while he was with the U. S. Army. He received his degree from Union which he entered in 1939.

Stacey Manfg. Appoints New York Representative

T. A. McHugh

Thomas A. McHugh has been appointed New York Representative of The Stacey Manufacturing Company, Cincinnati, Ohio, with offices at 30 Church Street.

Mr. McHugh is a graduate of Georgetown University and during the war was Coordinator of the submarine program for the Navy.

The Stacey Manufacturing Company has been serving the gas industry for over 96 years. About a year ago, this company completed the first all welded vertical panel Gas Holder erected in the State of Massachusetts. The Company has built a large addition to its plant in Cincinnati and has greatly diversified its products, serving many industries and specializing in Gas Holders and Gas Plant Equipment.

Estate Names Ad Manager

The appointment of Lewis W. Selmeier as Advertising Manager has just been announced by Cecil M. Dunn, Director of Sales of the Estate Heatrola Division, Noma Electric Corporation. Mr. Selmeier was associated with the Estate organization, in advertising and sales, for six years prior to the war. Since his return from three years Army service, largely overseas, he has been Vice-President of Robert Acomb, Inc., Cincinnati advertising agency.

Mr. Selmeier will work with Mr. Dunn in executing the company's expanded advertising program for the sale of Estate Gas and Electric Ranges and Estate Heatrola space heaters. The Advertising, as well as Sales, offices are now located in Hamilton to assure the best coordination of all merchandising functions.

IRON OXIDE

For purifying Manufactured Gas. How many tons do you need for quick delivery?
I have presently 2000 tons ready for immediate shipment.
Write at once
William Vennes, Grand'Mere, P.Q., Canada

GOODMAN
USED SINCE 1897
"Z" HANDLE & LOCKING SLEEVE
GAS MAIN STOPPER

The Reliable Shut-Off for Street Mains

THE GOODMAN STOPPER

Now has the "Z" handle for easy manipulation. When locked in place it holds. Stopper cannot slip. Gas cannot pass. Adjusted in 30 seconds.

Ask for circulars on this and other distribution equipment.

Nearly a half century of service to the Gas Industry.

Safety Gas Main Stopper Co.
523 Atlantic Avenue, Brooklyn, New York

Radio Network to Improve Gas Service

An investment of $200,000 extending through 1951 by The Pittsburgh Group of affiliated gas companies in the Columbia Gas System for a short wave radio network within a five-state area will improve natural gas service for the customers of The Manufacturers Light and Heat Co.

Application has been made to the Federal Communications Commission for construction permits to establish short wave sending and receiving stations.

Plans call for immediate construction of an initial group of transmitters. Emergency radio communication by the gas company will be on a requested assignment of 33.34 megacycles, in the 30-40 megacycle channel of frequency modulation reserved for power-utility services.

The radio network will be employed to improve the dispatching, control and operation activities related to more than 10,000 miles of natural gas production and transmission lines operated by the affiliated companies.

Major use of radio communication will be to link the offices of field superintendents and their scattered work crews in times of emergencies. At present there is no way for supervisors to quickly communicate with crews at work in outlying areas, nor for such gangs to communicate with gas company offices and shops.

Air Conditioning Exposition

Every known device for promoting indoor comfort in an adverse climate will be represented at the forthcoming Air Conditioning Exposition in Grand Central Palace, New York, February 2-6, 1948. Many will be entirely new, others strikingly improved. With some 460 spaces already booked applications are stil being received for further assignments.

As heretofore the International Exposition Co. will manage the exposition, with Charles F. Roth, president, as manager, and E. K. Stevens, associate manager. The show will be closed to the public.

Rubber Hose for L.P. Gases

A new rubber hose with increased strength and lighter weight has been developed by United States Rubber Company for handling propane and butane petroleum gas.

The hose is made of a special synthetic rubber compound capable of resisting the effects of liquefied petroleum gas. It is reinforced with Ustex yarn, a chemically-treated cotton textile having high strength and low stretch characteristics.

The hose will be molded in continuous lengths in three sizes—one-half inch, three-quarter inch and one inch inside diameter. It will be branded every five feet with the name U. S. Giant L. P. G. hose. It is intended for use primarily in transferring the liquefied petroleum gas to homes, factories and other points from supply truck to storage tank.

Lincoln Electric Appoints Two New District Managers

A. F. Boucher, welding engineer for The Lincoln Electric Company, handling special accounts in the Detroit area, has been transferred to become district manager for the Milwaukee office at 733 N. Van Buren St., Milwaukee, Wisconsin.

Marshall Ford has been made district manager for The Lincoln Electric Company's Minneapolis office at 529 So. 7th St., Minneapolis, Minnesota. Mr. Ford has been a welding engineer for The Lincoln Electric Company since 1941 in the Pittsburgh district. He has been active in the development of welding applications in the steel and mining industries.

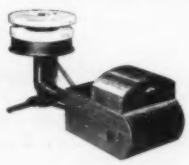
School Diplomas Sent Out

It took careful reading and considerable time by the Section staff to correct and grade over 250 examination papers of the men who attended the Industrial Gas School in Washington last Spring.

Everyone who took the examination received a passing mark or better and it is very gratifying to note that more than half of the students received an A or an A+ which means a mark of over 90% and 95% respectively.

An attractive certificate signifying satisfactory completion of the course has been sent to each student who turned in an examination paper, and these certificates bore the signatures of the chairman of the Section, the chairman of the School committee, and the secretary of the Section.

Eliminate
costly change-over work..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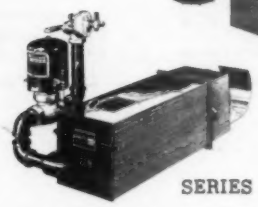
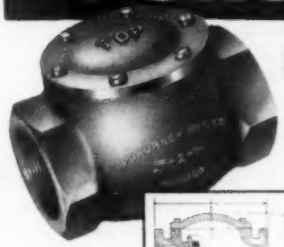

SERIES 400

The Roberts-Gordon burner is readily adaptable to all types of gas with no major change of parts and without sacrificing efficiency. All that's necessary is to adjust the patented iris orifice for the proper input and the air shutter for the right amount of air. We estimate the saving to the utility to be at least $15 per customer . . . a mighty important reason for being glad you sell the Gordon.

ROBERTS-GORDON APPLIANCE CORP.
137 Arthur Street • Buffalo 7, N. Y.
Pioneers of the gas conversion industry and makers of "84", "302-20", "400" and Nordenson conversion burners

POKORNEY



SWING CHECK VALVES
SERIES 3000

Specify Pokorney check valves for more efficient service on manufactured, natural or liquefied petroleum gas lines. Series 3000 valves are fitted with a synthetic rubber seat permanently molded to aluminum check disc. Provides a perfect seal against back flow... unaffected by liquefied petroleum gases or condensate. Special seat design and precision machining prevent sticking. Free action disc opens fully providing full flow thru valve with minimum resistance and negligible pressure drop. Size ¼" to 6" available for immediate shipment from stock in bronze, aluminum and grey iron. Larger sizes on special order. Write for prices and bulletin today.

Pokorney valves are machined to strict tolerances. Every valve individually tested. Fully guaranteed.

CHECK these Pokorney features:

- ☐ Soft seat, synthetic rubber permanently molded to disc.
- ☐ Tight seal against back flow.
- ☐ Non-sticking on minimum flow.
- ☐ Valve seat not affected by condensate or liquefied petroleum gases.
- ☐ Full flow, low maintenance, long service.

SERVING THE GAS INDUSTRY FOR OVER 40 YEARS
POKORNEY MANUFACTURING COMPANY
3117 Clybourn Avenue, Chicago 18, Illinois

The Need for Trained Salesmen

Editor, American Gas Journal

Dear Sir:

National and local advertising, tailored to a modern pattern, will do much to create a desire, to instill in the new home manager, those who have been served so well by gas for so many years, the commercial users and the industrialists that "Gas has got it".

With the day of selected selling not far in the future, the gas industry will be faced with theproblem of selecting salesmen, indoctrinating them, and subjecting them to intensive training.

The day immediately after war's end when a few of the boys rode the "gravy train" is over - - - todays order takers, who need know little or nothing about gas, have become soft - - - some of them will dig-in, study and learn the gas business and be able to make the grade - - - there are not enough of these men, however, or older heads in the sales end of the industry to meet and overcome the men who will be competing with them for the cooking, water heating, refrigeration, home heating, commercial and industrial business - - - L P gas, which is no longer an infant, and the electric industry are alert - - - they are recruiting and training men - - - "the battle for load" will be a big one.

Gas range manufacturers' reports show that 1,166,000 ranges and 937,000 water heaters were produced and shipped during the first quarter of this year, an appreciable increase over the same period in 1946 - - - older, well known appliance manufacturers of gas ranges, water heaters and other gas consuming appliances are expanding plant facilities, building new plants, retooling, making new dies and adding improved machinery.

New organizations are entering the field - - - 1948 will see production accelerated - - - improved streamlined products will be offered the public - - - competition will be keen, many dealers who entered the picture in immediate post war time will fold - - this will call for selected selling - - - new families in new homes and the replacement business will necessitate larger crews than the industry has ever known, trained men with a complete knowledge of gas and the sale of gas service.

Sales Engineer

W. B. Eckenhoff Sales Manager, Roberts & Mander

Roberts & Mander Corporation, Hatboro, Pa., has announced the appointment of W. B. Eckenhoff as Sales Manager.

In making this announcement, H. S. Minster, President, pointed out that Mr. Eckenhoff would exercise general supervision and direction of the company's sales and marketing program, and will have his headquarters at the home office in Hatboro. He succeeds John H. Emery who died on August 24th.

Mr. Eckenhoff has been active in the sales organization of Roberts & Mander for over 13 years and was Assistant Sales Manager for 8 years before his present appointment.

Christy Payne Jr. Elected V.P. of Peoples Natural Gas

The Peoples Natural Gas Company has announced the election of Christy Payne, Jr., as a vice president of the company.

Mr. Payne has been in the natural gas business with Peoples, and related companies, since 1927, has been sales manager of the company since 1937, and a director since 1940. In 1946 he was elected a vice president of New York State Natural Gas Corporation, an affiliated company.

In his new position Mr. Payne will have general supervision of all leasing of lands for drilling, gas purchases, distribution, sales and advertising.

Cribben & Sexton Names Port Production Superintendent

Cribben and Sexton Company announces the appointment of Dr. Frederick Port as Production Superintendent. Dr. Port succeeds Fred Doering, who has been directing the manufacture of Universal Gas Ranges for the company since 1943.

In January, 1946, Dr. Port joined Cribben and Sexton Company as Chief Engineer and remained in this capacity until his recent appointment.

FLOYD K. LAWSON

The death of Floyd K. Lawson, Executive Vice President and Treasurer of the Geo. D. Roper Corporation, occurred recently at West Yellowstone, Mont. He had left Rockford planning a brief western trip.

Mr. Lawson was born in Rockford, March 8, 1899. His business career was started in 1917 with the Roper organization where he was assigned to the billing department. Later he was transferred to the sales department, advancing to director of sales. In 1942 he was made secretary and treasurer and shortly after was made executive vice president and treasurer. He was also a director of the company.

Recently Mr. Lawson had completed his thirtieth year of continuous service with Roper.

WILLIAM E. MUELLER

William Everett Mueller, fifty-nine, industrialist, president and treasurer of the Mueller Company of Decatur, and the Columbia Iron Works, Chattanooga, Tenn., died in Decatur September 22nd. He was also chairman of the board of Mueller, Ltd., of Sarnia, Ontario.

PETER E. FLUOR

Peter E. Fluor, president and chairman of the Board of Directors of the Fluor Corporation, Ltd., Los Angeles, passed away suddenly on September 10th at his home in Anaheim, California. Death was due to coronary thrombosis. Mr. Fluor was 52 years old.

With the company since 1915, and president since 1943, Mr. Fluor was largely responsible for the development of the Fluor Corporation from a small, general contracting concern to its present status.

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Robertshaw-Fulton Controls

Formation of a new concern in the field of automatic controls, known as Robertshaw-Fulton Controls Co., through the merger of Robertshaw Thermostat Co., Youngwood, Pa.; Fulton Sylphon Co., Knoxville, Tenn., and Bridgeport Thermostat Co., Bridgeport, Conn., was announced Sept. 25th by John A. Robertshaw, president of the new firm.

Two others included in the new set-up in addition to those merged, are American Thermometer Co., St. Louis, and Grayson Heat Control, Ltd., Lynwood, Calif.

The officers, besides Mr. Robertshaw, are R. S. Reynolds, chairman; J. V. Giesler, executive vice-president; T. T. Arden, executive vice-president; R. S. Reynolds, Jr., financial vice-president; Walter H. Steffler, secretary and treasurer, and Walter L. Rice, general counsel.

Cylindrical Cooling Tower

Santa Fe Tank and Tower Company of Los Angeles reveals a new and revolutionary development in cooling tower construction and design, the *Cylindrical Tower*. The new tower is the first of its kind, having been conceived by Santa Fe engineers only last November.

The noteworthy feature of circular design allows air to enter the tower from any point of the entire 360° circumference, instead of from only two sides—or two sides and four corners. This significant factor accounts for a more even distribution of air, and also reduces the need for baffles or diverters.

The round construction of the tower also allows loads imposed by wind loads to be reduced; in turn, reduces loads imposed on supporting structures, such as buildings, sub-structures or concrete foundations. The cylindrical tower may be built in either individual or multiple-cell units . . . either of wood or steel construction in single wall or in double wall, with the inner wall of 2″ nominal thickness and the outer wall of 1″ nominal thickness or less.

Further information available through Santa Fe Tank and Tower Company, 5401 So. Boyle Avenue, Los Angeles 11, Calif.

Underground Coal Gasification Report Released by Mines Bureau

Pioneer accomplishments of the first government-sponsored attempt to burn unmined coal to produce gas in the United States—technically termed the underground gasification of coal in place—are described in detail in a report released recently by James Boyd, Director of the Bureau of Mines.

The successful gasification experiment, conducted jointly by the Bureau and the Alabama Power Company at Gorgas, Ala., between January 21 and March 12, 1947, represented an important phase of the Bureau's comprehensive research program on the carbonizing properties of coal and by-product yields and the production of synthetic liquid fuels.

The publication of the final and complete results of the 50-day experiment and the subsequent examinations of the underground workings marks the first time in the United States—and probably the world—that such detailed information has been made available to American industry and the general public, Mr. Boyd stated.

Although underground gasification of coal is new to this country, the process has been in practical use in Russia for many years and continued expansion is expected in the Soviet. However, comparatively little technical information has been published.

All of the primary and secondary objectives were achieved during the initial gasification experiment at Gorgas. Without consideration of commercial cost factors, the 50-day project determined that coal in place could be burned sucessfully, that the burning could be controlled, that the action of the roof appeared favorable for underground gasification because no interfering roof falls ocurred, and that the quantity and heating value of the gas produced per pound of coal burned varied with the several types of blasting.

In preparing for the test, the experimental area at the Gorgas mine was isolated from adjoining coal by outcrops on three sides and an open cut on the fourth side. A U-shaped mine was developed in the coal bed, lying horizontally 30 feet under a hilltop, to form a pillar of solid coal 40 feet wide and 150 feet long inside the "U."

Five types of blasting were used to produce gas-air, oxygen-air, oxygen-air-steam, oxygen-steam, and steam blasts. By regular sampling and analyzes of gases given off, it was determined that the first three methods produced gases that could be used for generating power, while the oxygen-steam and steam blasts yielded gases suitable for synthesis purposes.

At the conclusion of the gas-making runs, the mine was cooled first with steam and then with water to permit examination of the underground residue and to measure the amount of coal burned. It was estimated that 236 tons of coal had been burned completely and 164 tons were coked during the combustion period.

One of the encouraging features of the entire experiment was the action of the roof during the burning process. Instead of falling as anticipated, the roof rock became plastic under the intense heat and expanded and settled down on the mine floor directly behind the reacting coal face. Tests showed that this roof action resulted in a uniform size opening for air and gas passage along the coke-rock interface.

Of the five types of blasts, air alone was used most frequently during the experiment. For each pound of coal burned, this method produced an average of 108 cubic feet of gas having a weighted average of 47 B.t.u. per cubic foot. Comparative heating values for other methods were 200 B.t.u. per cubic foot with steam runs following air blasting; 50 B.t.u. for the air-oxygen blast; 110 B.t.u. for the air-oxygen-steam blast; and 135 B.t.u. for the oxygen-steam blast. These average results are considerably lower than were obtained under the most favorable conditions during the investgation.

In addition to a detailed description of the successive stages of the development of the gasification project, tests during the actual burning, and the examination of the cooled mine, the illustrated Bureau report includes an appendix describing the laboratory test of roof rock and a chronological history of the experiment from the ignition of the fire on January 21 to the end of the forced burning of coal on March 12, 1947.

A copy of the publication, Report of Investigations 4164, 'Experiment in Underground Gasification of Coal, Gorgas, Ala.," may be obtained by writing to the Bureau of Mines, Department of the Interior, Washington 25, D. C.

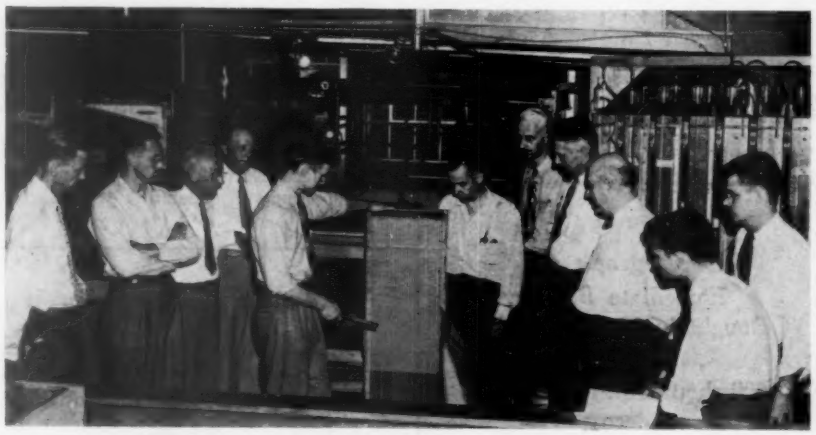
Water Heater Campaign

Ruud Manufacturing Company, Pittsburgh, began a new campaign in September to promote its automatic gas water heaters with Monel tanks. Half page advertisements in two colors are scheduled for six large-circulation consumer magazines. Copy features the theme: "The hotter the water the whiter the wash." Marschalk and Pratt Company, New York, is the advertising agency handling the account.

Airplane Design Technique Applied to Gas Venting Research

As part of American Gas Association Domestic Gas Research in venting gas heaters, and other gas appliances, where no standard chimney connections are available, scale models of houses (1/24 sizes) are tested in the wind tunnel by experts of Purdue University's Department of Aeronautical Engineering, Lafayette, Indiana. Wind speeds up to 60 miles an hour are used and the models are placed in 5 different positions with respect to wind direction.

In the photograph, D. L. Arne, of the Aeronautical Engineering Department, is demonstrating to the Technical Advisory Group for Direct Space Heating Research of the Committee on Domestic Gas Research the methods used in taking up to 400 simultaneous readings of wind pressure on different parts of the exterior of a scale model house for each of the 5 positions the house can be placed in. From this, and other types of data collected, the intensity and depth of static pressure at all positions on the exterior of houses can be calculated and flow diagrams and turbulance diagrams prepared.



GAS VENTING RESEARCH AT PURDUE IND.

From left to right: C. E. Blome, Purdue Research Foundation; Edmund F. Lorman, Day & Night Manufacturing Co., Monrovia, California; E. C. Adams, Chairman Technical Advisory Group; Glenn C. Carnahan, James B. Clow & Sons, Chicago, Illinois; D. L. Arne, Purdue Research Foundation; William M. Myler, Jr., Surface Combustion Corporation, Columbus, Ohio; J. R. Scherrer, Jr., Security Manufacturing Co., Kansas City, Missouri; W. A. Stuckey, The Moore Corporation, Joliet, Illinois; Eugene D. Milener, American Gas Association; Paul White, Purdue Research Foundation; Sam C. Hite, Purdue Research Foundation.

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